IMPORTANT FOREST INSECT OUTBREAKS IN WESTERN NORTH AMERICA

DURING 1963

Prepared by units of the Canadian Department of Forestry and United States Forest Service in the area of the Western Forest Insect Work Conference for the Fifteenth Annual Meeting at Banff, Alberta.

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Assembled by the Insect and Disease Control Branch, Division of Timber Management, U. S. Forest Service, Portland, Oregon. February 17, 1964.

IMPORTANT FOREST INSECT OUTBREAKS

ALBERTA REGION

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BARK BEETLES

SITKA-SPRUCE BEETLE (Dendroctonus obesus (Mann.))

Hosts this year: White spruce

Current conditions: The bark beetle D. obesus caused 5 per cent mortality in a mature spruce stand along the south side of the Peace River near 5th Meridian. The area in which damage occurred was approximately 50 square miles in extent but because the work had to be done during the course of an aerial survey the cruise was limited to a single 2,400-foot strip 1/3 of a chain wide.

Trend: Not determined

Control: Nil

DEFOLIATING INSECTS

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Hosts this year: White and Engelmann spruce, Balsam and Alpine fir.

Current conditions: The one-year-cycle spruce budworm continued to cause serious damage to forests in the Northwest Territories in 1963. In Alberta damage was reduced from that reported in 1962 although the Wabiskaw River outbreak continued active. Numerous larvae of the two-year-cycle spruce budworm were present in the Saskatchewan Crossing area of Banff National Park; but since only first-year larvae were present damage was light.

The infestation along the Mackenzie River increased in size and intensity in 1963. Moderate or severe defoliation was present from Mills Lake to the mouth of the Dahadinni River. Damage not only occurred in the valley of the Mackenzie but often extended 30 to 40 miles back from the River. As is characteristic of this outbreak, which has persisted in the Mackenzie Valley for at least 10 years, the degree of defoliation was variable taking the form of a mosaic continuously changing in intensity throughout the infested area. The 1963 defoliation pattern was characterized by a greater proportion of moderate and severe patches which were larger in area than has been usual in the past. Tree mortality was evident in areas where severe defoliation has occurred for several consecutive years. The infestation in the Liard River area near Fort Liard had declined markedly from that reported in 1962, only a few pockets of light or moderate defoliation were observed in 1963.

The outbreak along the Slave River increased in size and intensity in 1963; it extended from the south end of McConnell Island to within 10 miles of the mouth of the Salt River and westward to the Little Buffalo River. Preliminary evidence from tree rings suggests that this infestation may have been present on Long Island in the Slave River for 25 years. An estimated 30 to 40 per cent of the trees on the southern half of Long Island were dead as a result of this outbreak.

In Alberta severe defoliation again occurred at the junction of the Muddy and Wabiskaw rivers. Although this infestation was not as intensely surveyed as in 1962, the area of moderate or severe damage was reduced from 50 square miles in 1962 to an estimated 12 square miles in 1963.

Trend: Increasing

Control: Nil

LARCH SAWFLY (Pristiphora erichsonii (Htg.))

Hosts this year: Tamarack

Current conditions: There was a marked reduction of moderate or severe defoliation by the larch sawfly in 1963 from that reported in 1962. The trend for this area of defoliation to move north and west

continued. With minor exceptions all of the areas of heavy defoliation observed in 1963 were north of the Peace River. Only in the extreme northwest corner of the Province and in the Northwest Territories were large areas of continuous moderate or severe defoliation observed. Although the 1963 decline seems to be following a trend which has been apparent for several years, it should be viewed with caution because of the ability of this insect to remain in its cocoon for more than one year. In the Northwest Territories moderate or severe defoliation was reported as far west as Sibbeston Lake and east to the Little Buffalo River.

Trend: Decreasing

Control: Nil

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Hosts this year: Aspen poplar

Current conditions: The forest tent caterpillar caused defoliation of aspen over a very large area of Alberta in 1963. As in 1962 this area was in the north-central part of the Province extending from the Saskatchewan Border between the North Saskatchewan and Clearwater rivers to the British Columbia Border near Grande Prairie and from the Whitecourt region on the south to near Fort Vermilion on the north. The area in which moderate or severe defoliation occurred was smaller; 69,000 square miles in 1963 as compared to 75,000 square miles in 1962. The decline was especially evident in the eastern part of the Province where high populations have been in existence for 6 years. In this area continuous severe defoliation has been replaced by a mosaic of light, moderate and severe defoliations. Other changes in 1963 were a slight extension of the heavily defoliated area in the western Peace River Region and some very noticeable "holes" which have appeared in the rather solid block of defoliation which occurred in 1962. These "holes" coincide with several groups of hills (Buffalo Head and Naylor hills, and the Birch Mountains) which rise above the general level of the northern part of the Province. Although complete records are not available for all of these areas, those from the westernmost hills show that larvae failed to emerge from the eggs and weather records showed a sharp dip

in temperature for approximately 2 to 7 days prior to the time that larvae hatched in adjacent regions suggesting that late frosts were a major mortality factor at higher elevations in 1963.

Indications of the impending decline of this outbreak are: small and irregular egg clusters, poor hatch, heavy incidence of diseased larvae, increased parasitism, incomplete cocoons, crippled adults and decreased numbers of egg bands at sampling stations.

Trend: Decreasing

Control: Nil

LODGEPOLE NEEDLE MINER (Evagora starki Free.)

Hosts this year: Lodgepole pine

Current conditions: The needle miner E. starki caused considerable damage to lodgepole pine in localized areas of Banff National Park in 1963. Since these insects were in the second and third instar, increased damage can be expected in 1964 when the larvae will have reached their final instars. Mortality in the winter of 1962-63 was very light and the long open fall in 1963 allowed the needle miners to feed much later than usual. In Banff National Park this insect normally overwinters before completely mining a second needle. In 1963 approximately 6 per cent had completely mined a second needle and had begun to mine a third.

As in 1962 the most heavily infested area was in the valley between Stoney Squaw Mountain and Mount Norquay where at the 5,000 foot level a medium-high population caused much needle drop and discoloration. Needle miner larvae averaged 44 per 5-year-tip, and since the trees had only 94 needles per tip in the fall of 1963, they are expected to have less than 50 needles per tip when the larvae have completed their feeding early in 1964.

A medium-high infestation also occurred at the 5,000 foot level on Massive Mountain but since the area was not subjected to heavy attack by the 1960-62 generation there are many more needles per tip.

Trend: Increasing

Control: Experimental sprays were applied to a few trees in 1963. A small area may be sprayed in 1964.

A PINE TUBE MAKER (Argyrotaenia tabulana Free.)

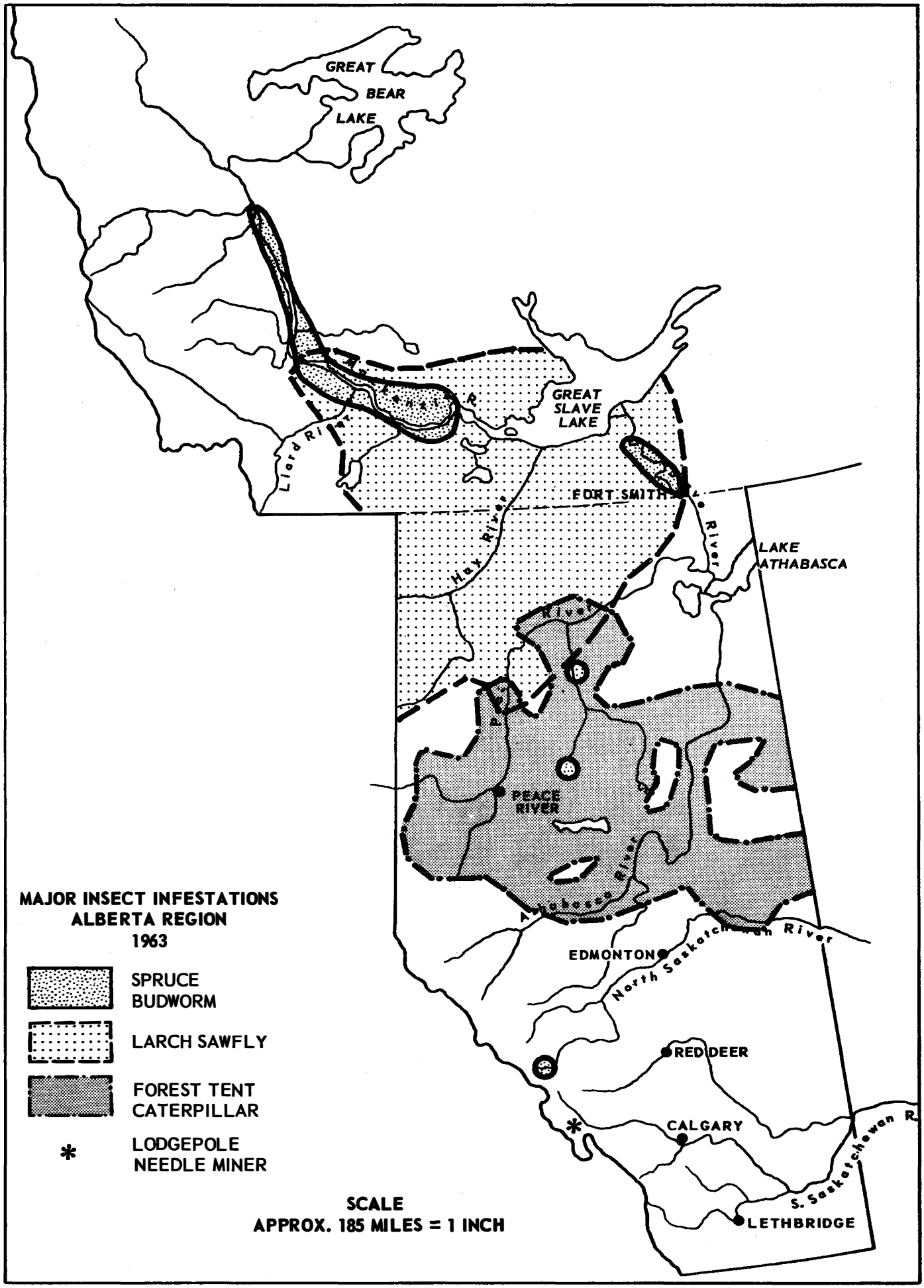
Hosts this year: Jack and lodgepole pine

Current conditions: The infestation of this insect in the northeastern part of Alberta reported in 1962 had disappeared in 1963. Although collections from pine were made throughout the region damage was negligible except in a small area 100 miles northeast of Fort Providence where moderate damage to regeneration jack pine occurred.

Trend: Decreasing

Control: Nil

December 23, 1963. Calgary, Alberta.


GREAT
BEAR
LAKE
GREAT
SLAVE
LAKE
FORT SMITH
LAKE
ATHABASCA
PEACE
RIVER
EDMONTON
RED DEER
CALGARY
LETHBRIDGE
MAJOR INSECT INFESTATIONS
ALBERTA REGION
1963
SPRUCE
BUDWORM
LARCH SAWFLY
FOREST TENT
CATERPILLAR
LODGEPOLE
NEEDLE MINER
SCALE
APPROX. 185 MILES = 1 INCH

IMPORTANT FOREST INSECT OUTBREAKS

BRITISH COLUMBIA - 1963

G. T. Silver

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BARK BEETLES

SPRUCE BEETLE, Dendroctonus obesus (Mann.)

Host this year: White spruce

Current conditions: An epidemic of spruce beetles built up in the 1960's in the mature and overmature white spruce forests of the Prince George and Prince Rupert Forest districts. The severe attacks which occurred in 1962 were not fully apparent until the spring and summer of 1963. Over 600,000 acres are infested; attacks were heavy on about 160,000 acres. The total volume of timber killed or attacked has been estimated at 440 million cu. ft.

The spruce beetle in B. C. has mainly a two-year-cycle with a portion of the broods developing to adults in one year.

Trend: The attack in 1963 decreased compared with 1962. The beetle flight in 1964 is expected to be greater than in 1963, but not as heavy as in 1962. Areas of heavy attack in 1962 contain the largest spruce beetle populations.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk.

Host this year: Douglas fir

Current conditions: The number of beetle killed red-topped Douglas fir trees counted in the summer of 1963 was greater than the 1962 count in numerous portions of Kamloops and Prince George Forest districts, and in a few localities of Nelson Forest District. This indicates an increase in 1962 attacks over 1961. The greatest concentration of red-tops was from Cache Creek to Williams Lake and Quesnel.

Trend: Winter mortality of beetles in the Cariboo was higher in 1962-63 than for several years. Adult emergence was drawn out over a longer than normal period. The attack in 1963 is believed lighter than occurred in 1962.

MOUNTAIN PINE BEETLE, Dendroctonus monticolae Hopk.

Hosts this year: Western white pine, lodgepole pine

Current conditions: The number of red-topped lodgepole and western white pine trees increased in 1962 in the Nelson, Kamloops, Prince George, and Prince Rupert Forest districts. This was the second consecutive year that attacks by the mountain pine beetle have increased. Heavy tree mortality occurred at Trepanier Creek, Kamloops District, and north of Tezzeron Lake, Prince George District. Many other infestations were observed throughout the districts.

Trend: Heavy tree mortality is expected to continue in 1964.

SUCKING INSECTS

BALSAM WOOLLY APHID, Adelges piceae (Ratz.)

Host this year: Amabilis fir

Current conditions: The area of amabilis fir stands known to contain balsam woolly aphid increased in 1963. The new regions were all adjacent to the previously determined infestation boundaries. Tree mortality in 1963 increased slightly compared with 1962, but total mortality constitutes only a small proportion of the total volume in infested stands. Shipments of Aphidoletes thompsoni Mohn., Pullus impexus Muls., Aphidecta obliterata L., and Laricobius erichsonii Rosen., predators were released on Seymour Mountain in 1962.

Trend: Static or small increase.

GREEN SPRUCE APHID, Neomyzaphis abietina Wlkr.

Host this year: Sitka spruce

Current conditions: Damage ranging from light to heavy occurred from Tow Hill on northern Graham Island to the southern portion of Moresby Island on the Queen Charlotte Islands. The attack was concentrated on larger trees; regeneration was not greatly affected. Defoliation was lighter than in 1961 when the last infestation occurred.

Trend: Possible decrease.

DEFOLIATORS

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.) (one-year-cycle)

Hosts this year: White spruce, amabilis fir

Current conditions: Larval populations remained at high density at the Smith River infestation, and defoliation ranged from moderate

to severe in the lower elevations of the Liard River Valley. Light to moderate defoliation was recorded at the Kledo River infestation (mileages 320 to 350, Alaska Highway). Amabilis fir in the Kitimat area was defoliated for the fourth consecutive year.

Trend: Egg samples indicate the infestations at the Smith and Kledo rivers and at Kitimat will continue in 1964.

Control: No chemical control is recommended for 1964.

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.) (two-year-cycle)

Hosts this year: Alpine fir, white spruce

Current conditions: Larval populations in Central interior B. C. were lighter than in 1961. Populations in the Babine Lake region declined to their lowest level since 1956.

Trend: Light to moderate defoliation is expected in some areas of the Prince George Forest District in 1964.

DOUGLAS-FIR TUSSOCK MOTH, Orgyia pseudotsugata (McD.)

Host this year: Douglas fir

Current conditions: The Douglas-fir tussock moth outbreak continued for the third successive year in the North Okanagan and in the Similkameen Valley. There was considerable expansion and increase in the number and intensity of infestations in 1963. Areas of moderate to severe defoliation were scattered throughout the Okanagan Valley, and severe defoliation of a narrow strip of Douglas fir extended for about 8 miles between Keremeos and Hedley. Polyhedral virus was present in several localities; the most severe virus infestions were in the Hedley infestations.

Trend: Egg samples in October indicate that population declines can be expected in some localities, but further defoliation may occur in 1964 in a few areas.

Control: Chemical control is recommended for 1964 only around certain tourist resorts and one government campsite.

PINE BUTTERFLY, Neophasia menapia F. & F.

Host this year: Ponderosa pine, Douglas fir

Current conditions: The pine butterfly infestation recurred on some 400 acres near Okanagan Landing, Vernon, B. C. Defoliation was severe on 100 acres, and some tree mortality is expected to occur.

Douglas fir in the Nimpkish River Valley on Vancouver Island suffered light to moderate defoliation in 1963. A large proportion of the eggs sampled in September were destroyed by predators.

Trend: Heavy defoliation may recur about the periphery of the Okanagan Landing infestation in 1964. Light to moderate defoliation is expected in the Nimpkish.

Control: No chemical control has been recommended for 1964, but some private owners may wish to spray trees on their property.

WESTERN HEMLOCK LOOPER, Lambdina fiscellaria lugubrosa (Hlst.)

Hosts this year: Western hemlock

Current conditions: Populations of the western hemlock looper increased in the Prince George and Kamloops Forest districts. The largest population was in the Hidden Lake area near Enderby where noticeable defoliation occurred over some 100 acres.

Trend: Increase

Control:
No recommendations regarding the necessity for chemical control have been made as yet.

FOREST TENT CATERPILLAR, Malacosoma disstria Hbn.

Host this year: Trembling aspen

Current conditions: Infestations continued throughout much of the Interior in 1963. The only area of population collapse was between Donald and Nicholson. Defoliation occurred from Spillimacheen south to Edgewater, Summit Lake, in the southern Slocan, near Taylor, around Valemount and for 20 miles south of Valemount along the Canoe River, and in the Bulkley River Valley between Smithers and Houston. About 240 square miles were defoliated in West Nelson at Waneta, Castlegar, Nelson Balfour, Creston, Big and Little Sheep Valley and Bridesville.

Trend: Variable severe defoliation can be expected in some infestations in 1964; populations will decline in some areas.

SILVER-SPOTTED TIGER MOTH, Halisidota argentata Pack.

Hosts this year: Douglas fir, hemlock

Current conditions: Populations declined in all areas in 1963.

Trend: Decrease

EUROPEAN PINE SHOOT MOTH, Rhyacionia buoliana Schiff.

Hosts this year: Mugho pine, lodgepole pine, Austrian pine, ponderosa pine

Current conditions: An intensive survey was carried out in southern B. C. in 1963 to determine the status of the European pine shoot moth. The presence of the shoot moth in Vancouver and Victoria was re-affirmed. Of more interest was the detection of the shoot moth at several localities from Vernon to Penticton in the Okanagan Valley. The most significant record was an adult reared from a mature naturally seeded ponderosa pine growing on the Experimental Station at Summerland.

Trend: Uncertain. Additional surveys will be required to determine the trend of the shoot moth.

LARCH SAWFLY, Pristiphora erichsonii Htg.

Hosts this year: Eastern larch, western larch.

Current conditions: There was a further increase in larch sawfly populations on eastern larch between miles 163 and 275, miles 342 and 365, Alaska Highway, and at mile 32.5 Beatton River Road, where defoliation ranged from 40 to 95%. Population increases on western larch were recorded in the North Okanagan, Shuswap River Valley, and between Lumby and Mabel Lake.

Trend: Continued increases expected in 1964.

NEEDLE MINERS

DOUGLAS-FIR NEEDLE MIDGES, Contarinia spp.

Host this year: Douglas fir

Current conditions: Severe infestations were "spotty" in 1963. They declined irregularly in the Okanagan and Similkameen valleys, but expanded at most other points south of about 51° latitude in the Nelson Forest District. Trees in some localities had 80 to almost 100% of their needles infested.

Trend: Uncertain.

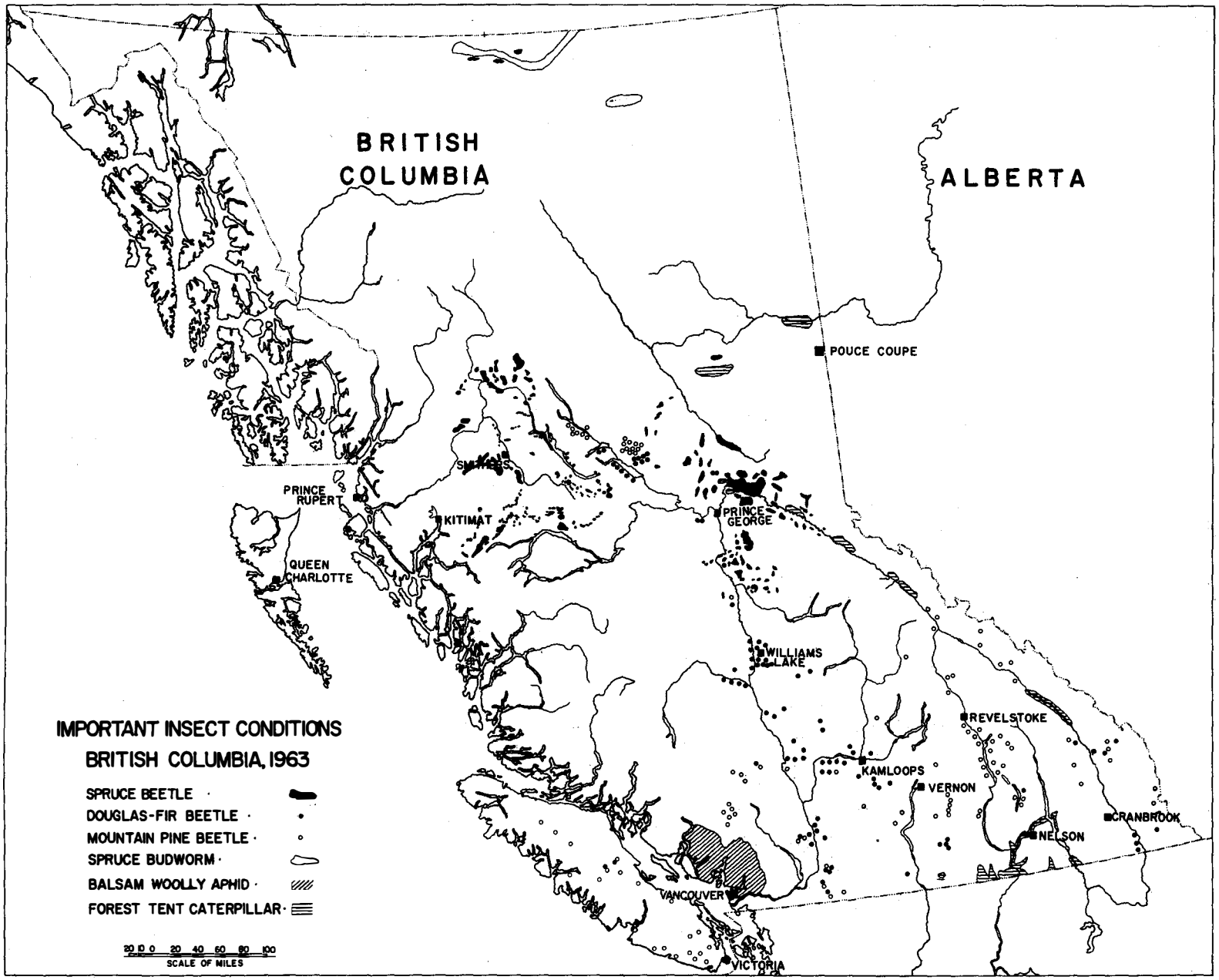
WEEVILS

A WEEVIL, Steremnius carinatus Boh.

Hosts this year: Douglas fir, Sitka spruce, western hemlock.

Current conditions: Damage to Douglas fir plantations occurred again in 1963 at many localities throughout Vancouver Island. The heaviest losses were Sproat Lake and Gold River. Some damage also occurred in the Queen Charlotte Islands.

Trend: Unknown. The results of a survey are not analyzed at time of writing.


BRITISH
COLUMBIA
ALBERTA
POUCE COUPE
PRINCE
RUPERT
KITIMAT
PRINCE
GEORGE
QUEEN
CHARLOTTE
WILLIAMS
LAKE
REVELSTOKE
KAMLOOPS
VERNON
CRANBROOK
NELSON
VANCOUVER
VICTORIA
IMPORTANT INSECT CONDITIONS
BRITISH COLUMBIA, 1963
SPRUCE BEETLE
DOUGLAS-FIR BEETLE
MOUNTAIN PINE BEETLE
SPRUCE BUDWORM
BALSAM WOOLLY APHID
FOREST TENT CATERPILLAR
20 10 0 20 40 60 80 100
SCALE OF MILES

CONDITION OF FOREST INSECTS IN ALASKA

1963

CONDITIONS IN BRIEF

The forest insect situation in Alaska is indeterminate, with bark beetles present only in endemic numbers while the black-headed budworm and hemlock sawfly are now becoming critical with numerous areas of 50-500 acres showing severe browning as a result of heavy insect feeding. Hardwood defoliating insects were nowhere conspicuous, and the unidentified geometrid defoliator of spruce on the Kenai Peninsula continued to decline. Mountain hemlock and white spruce on limited areas on the Kenai Peninsula are dying from undetermined physiological factors.

STATUS OF INSECTS

BLACK-HEADED BUDWORM, Acleris variana (Fern.). The black-headed budworm was very active in southeast Alaska north of Frederick Sound and on the northern half of Prince of Wales Island, and, in addition, a spot infestation was located near Valdez in western Alaska. The upward trend of the budworm in southeast Alaska is well illustrated by the increase in numbers and total acreage of blocks showing severe browning of hemlock trees resulting from budworm feeding. During the 1962 season five such areas with a combined area of 1,800 acres were found, but in 1963, 23 separate blocks totaling 8,000 acres in spots 50 - 500 acres in size were scattered throughout southeast Alaska.

Limited resources prevented on-the-ground examination of many of the browned areas of 1963, but three areas studied may be representative. At Calder Bay natural control factors apparently brought the infestation under control before any appreciable numbers of moths were produced. In the Juneau area moderate to heavy egg deposition indicates continuing epidemic conditions in 1964. One spot at Sitka presents a grave hazard in that very heavy egg deposition occurred on trees and in hemlock stands already severely damaged in 1963. In the case of the browned areas of 1962, subsequent egg deposition was very light in the affected areas and only sparse larval populations could be found there the following season. In contrast, the browned areas of 1963 pose the three possibilities of decreased activity, continued moderate to heavy populations, or a condition of extreme hazard where high insect populations are expected on trees already severely damaged in 1963. One critical area on southern Admiralty Island had high hemlock sawfly larval populations combined with epidemic budworm conditions, a combination which could cause serious damage in the coming season.

Egg parasitism of the over-wintering egg stage is very low; and, unless climatic conditions or other natural control factors intervene, considerable tree mortality and growth reduction may be forthcoming in 1964. Control: no control contemplated at present.

HEMLOCK SAWFLY, Neodiprion tsugae Midd. There was a moderate increase of the hemlock sawfly in southeastern Alaska north of Frederick Sound. No significant recoveries of sawfly eggs were made in the fall egg survey for the black-headed budworm and the hemlock sawfly, but the presence of high sawfly populations in midsummer in one area of epidemic black-headed budworm conditions causes some apprehension over possible tree damage in the season ahead.

The Northern Forest Experiment Station[1/] has found the later instar black-headed budworm larvae feeding readily upon the older hemlock needles, which could mean the hemlock sawfly may not be necessary for inducing tree mortality. It has been commonly believed that the feeding of the black-headed budworm on the needles of the year combined with the hemlock sawfly feeding upon the older growth has been responsible for much of the excessive loss of western hemlock in southeast Alaska. Control: no control planned as with black-headed budworm.

GEOMETRID DEFOLIATOR OF SPRUCE. This defoliator reported from the Kachemak Bay area on the Kenai Peninsula showed further decline from the 1962 level. Further efforts will be made to determine the identity of this pest. Control: no control planned.

ALASKA SPRUCE BEETLE, Dendroctonus borealis Hopk. The increase in Alaska spruce beetle expected in 1963 failed to materialize, and in all observed spots beetle populations are down from last year. An endemic beetle population plus abundant suitable host trees, however, pose a constant threat. Control: no control planned.

SITKA SPRUCE BEETLE, Dendroctonus obesus (Mann.). The Sitka spruce beetle has been reported from central Prince of Wales Island and from a point near Petersburg in southeast Alaska. Only several trees are involved at each point. Several blow-down areas in southeast Alaska in recent years have failed to produce any build-ups of this dangerous bark beetle. Control: no control planned.

CEDAR BARK BEETLE, Phloeosinus squamosus Blkm. The cedar bark beetle continued active in numerous areas throughout southeast Alaska causing

1/ Reported in conversation with the Station Entomologist.

a steady, moderate loss of trees. Damage remains confined to poor sites and low value stands. Control: no control planned.

IPS (PINE ENGRAVERS), Ips spp. Ips beetles remain in endemic status with no reports of damage received.

HARDWOOD DEFOLIATORS. No reports were received of noticeable defoliation by insects feeding on hardwoods of Alaska.

UNIDENTIFIED MALADY OF SPRUCE

An unexplained disorder of white spruce has appeared on the Kenai Peninsula and the Mt. McKinley National Park, with 200 acres affected on the National Park and two to three times as much area involved on the Kenai. The disorder is characterized by yellowing of the needles progressing from the oldest needles to the current growth, followed by loss of the needles. Examination of the Kenai area by entomologists and pathologists of the U. S. Forest Service failed to show any causative agent on foliage, branches, trunk or roots. Control: no control planned. Efforts will be made to determine the causative agent.

UNIDENTIFIED MALADY OF MOUNTAIN HEMLOCK

Mountain hemlock is dying from an unexplained cause on the Kenai Peninsula. The trouble is spotty on 1,000 acres spread out along five miles of highway about fifteen miles south of Portage on the Anchorage to Seward highway. Affected stands total approximately 250 acres. Foliage turned red in midsummer and dropped by fall, and in many instances all vegetation beneath affected trees had died. Examination of roots and aerial portion of affected trees by entomologists and pathologists, as in the above malady of white spruce, failed to reveal the causative agent. Esthetic and watershed values are involved rather than timber of commercial value. Control: no control planned. Efforts will be made to determine causative agent.

DAVID CROSBY
December, 1963

FOREST INSECT CONDITIONS IN CALIFORNIA - 1963

George L. Downing

U. S. Forest Service

BARK BEETLES

WESTERN PINE BEETLE (Dendroctonus brevicomis LeC.)

Hosts this year: Ponderosa and Coulter pine.

Current conditions: There was a definite decline in the Mother Lode Infestation, an outbreak that includes over one million acres of ponderosa pine on the west side of the central and southern Sierra Nevada. An extensive survey of a portion of the area in the fall of 1963 found an estimated 119,000 currently infested trees on 737,000 acres. This appears to represent a reduction in infested trees of over 75 percent compared with 1962. The decline in tree losses was believed due to intensive logging and chemical control of insect infested trees, to weather conditions that favored host resistance, and to several effective predators. Despite the overall reduction in tree-killing, many areas sustained moderate to heavy loss.

Elsewhere in northern California losses were generally low except in localized parts of Glenn and Modoc Counties.

In southern California damage by the western pine beetle remained relatively low in most maintenance control areas. Exceptions were the Arrowhead and San Jacinto maintenance control areas where an increased effort was made to bring tree losses down to an acceptable level.

Severe tree-killing continued in ponderosa and Coulter pine stands at Julian, San Diego County, and Lake Hemet, Riverside County. No attempt has been made to suppress these outbreaks.

Trend: Decreasing--continued moderate to heavy loss in some areas.

Control: Infested trees were logged or chemically treated in most merchantable-accessible areas, and most high-use recreational areas of the Mother Lode Infestation. In southern California, insect control plans have been developed for most infestation areas. The control phase of these plans involves various combinations of maintenance control, sanitation-salvage logging, logging of infested trees, and chemical control.

MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.)

Hosts this year: Sugar, ponderosa, and lodgepole pines.

Current conditions: Loss of mature sugar pine increased in portions of the central Sierra Nevada and in the Cascade Range, and losses remained at a fairly high level in the southern Sierra Nevada. An outbreak in the south Warner Mountains, Modoc County, resulted in the loss of 8.1 million board feet of mature ponderosa pine on 22,000 acres.

Heavy loss of young-growth sugar pine continued in the Miami Creek area of Mariposa and Madera Counties, and in the Shaver Lake area of Fresno County. Similar losses also continued in young-growth ponderosa pine stands in the Joseph Creek area, Modoc County.

Trend: Increasing in the central Sierra Nevada and south Warner Mountains. Static at a high level in the southern Sierra Nevada. Static at a low level in other parts of California.

Control: Currently infested trees were logged in many areas throughout the central and southern Sierra Nevada, and similar logging was started in the south Warner Mountains. Large numbers of mature sugar pine were chemical treated in Yosemite, and Sequoia-Kings Canyon National Parks. Attempts are being made to make green pole sales and to do thinning in infested young-growth stands in the Miami Creek area.

FIR ENGRAVER (Scolytus ventralis LeC.)

Hosts this year: White and red fir.

Current conditions: The Statewide epidemic of the fir engraver continued at a fairly high level but insect populations were down over those of last year. Areas of heavy tree loss included the Warner Mountains, Modoc County; Big Valley Mountain, Lassen County; Military Pass, Siskiyou County; Sierraville, Sierra County; Highway 108 above Strawberry, Tuolumne County; Sawpit Canyon and Sugar Loaf Mountain, San Bernardino County; and Palomar Mountain, San Diego County.

Trend: Decreasing--continued moderate to heavy loss in some areas.

Control: Timber sales have been made in many infestation areas but this at best has achieved only partial control. Chemical control has not been attempted.

JEFFREY PINE BEETLE (Dendroctonus jeffreyi Hopk.)

Host this year: Jeffrey pine.

Current conditions: Populations of this bark beetle remained low over most of the State. Significant tree loss continued at four locations in San Bernardino County and one new outbreak developed in Modoc County.

Trend: Static at moderate to low level.

Control: Logging and chemical treatment of infested trees.

IPS (Ips spp.)

Hosts this year: Ponderosa, Coulter, Jeffrey, knobcone, and sugar pines.

Current conditions: No serious infestations were reported. The low level of damage was believed due to improved host resistance resulting from favorable late winter and spring precipitation and to cool weather during the late spring and early summer.

Trend: Unknown.

Control: None.

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Host this year: Douglas-fir.

Current conditions: Tree losses remained low in all areas; however, broods were numerous in trees windthrown in the October 1962 storm in Humboldt, Del Norte, Trinity, and Siskiyou Counties.

Trend: Unknown.

Control: None.

RED TURPENTINE BEETLE (Dendroctonus valens LeC.)

Hosts this year: All pines.

Current conditions: Aggressive infestations resulted in occasional tree-killing of reserve ponderosa and Jeffrey pines in thinned stands in Mendocino, Modoc, and Lassen Counties. Populations of the red turpentine beetle were high throughout most of southern California.

Trend: Increasing.

Control: In a few campgrounds preventive measures were taken by spraying the bases of standing trees with lindane.

DEFOLIATORS

DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata McD.)

Host this year: White fir.

Current conditions: This tussock moth caused light to heavy defoliation on 20,000 acres at Knox Mountain, Modoc County; on 80 acres at Peddler Hill, Amador County; and on 600 acres at Iron Mountain, El Dorado County. Population increases were also noted at other locations.

Trend: Unknown.

Control: None.

WHITE-FIR SAWFLY (Neodiprion abietis complex Ross)

Host this year: White fir.

Current conditions: A general increase in sawfly populations occurred at several locations in northern and central California. Heavy defoliation seriously curtailed the harvesting of Christmas trees on part of a 22,000-acre infestation in Modoc County. Other infestations were reported from Tuolumne, Calaveras, Lassen, Modoc, Shasta, and Siskiyou Counties.

Trend: Unknown.

Control: Private landowners, growing Christmas trees, may attempt direct control of their infestations, depending on the results of surveys of the overwintering insect population. Control is not being considered for the other infestations.

PANDORA MOTH (Coloradia pandora Blake)

Host this year: Jeffrey pine.

Current conditions: An outbreak in Tulare and Kern Counties resulted in light to heavy defoliation of 7,500 acres. The infestation, although previously unreported, has been in progress for two or more years and some tree-killing has occurred. Two small infestations were also active in San Diego County.

Trend: Unknown.

Control: None.

LODGEPOLE NEEDLE MINER (Recurvaria milleri Busck.)

Host this year: Lodgepole pine.

Current conditions: Infestations continued in unsprayed stands, within previously known infestation areas, in Yosemite and Kings Canyon National Parks. An infestation of a closely related needle miner also continued at Sentinel Meadows, Mono County.

Trend: Static.

Control: In 1963 malathion was aerially sprayed on 4,000 acres in Yosemite National Park with 88 percent control, and on 450 acres in Kings Canyon National Park with 62 percent control.

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Host this year: White fir.

Current conditions: Mid-summer feeding resulted in heavy defoliation of stands in two areas of the Warner Mountains, Modoc County. However, an egg mass survey in the late summer found reductions of up to 97 percent in the number of eggs laid in 1963 compared with similar egg counts made in 1962.

Trend: Decreasing

Control: None.

NEEDLE SHEATH MINER (Zelleria haimbachi Busck.)

Host this year: Ponderosa pine.

Current conditions: Defoliation was observed in plantations and natural regeneration over much of central and northern California. An associated tip moth, Rhyaciona zozana (Kearf.) caused light feeding damage in many of the same areas.

Trend: Increasing slightly.

Control: None.

BROWSE AND RANGE INSECT (Aroga websteri Clarke)

Host this year: Sagebrush.

Current conditions: This insect caused moderate to complete defoliation of sagebrush on over one million acres in northern California, with the heaviest defoliation occurring in Modoc and Lassen Counties. The defoliation of bitterbrush, saltbrush, and mountain mahogany was also reported from several locations in this same area. The insects responsible for this defoliation were collected and have been sent to specialists for identification.

Trend: Static at high level.

Control: None.

LARGE ASPEN TORTRIX (Choristoneura conflictana (Wlk.))

Host this year: Quaking aspen.

Current conditions: Feeding damage declined significantly in the Homestead Flat and Long Valley areas, Modoc County. However, the damage from last year's feeding was still evident in these areas.

Trend: Decreasing.

Control: None.

BLUE-SIDED TENT CATERPILLAR (Malacosoma constrictum Stretch)

Hosts this year: Various oaks.

Current conditions: Infestations in Los Angeles and San Diego Counties showed a marked decline.

Trend: Decreasing.

Control: None.

FALL WEBWORM (Hyphantria cunea (Drury))

Hosts this year: Madrone and other broadleaved trees.

Current conditions: Extensive defoliation of many broad-leaved trees occurred along the Klamath River in Siskiyou County. No permanent damage is expected.

Trend: Unknown.

Control: None.

MISCELLANEOUS INSECTS

PINE REPRODUCTION WEEVIL (Cylindrocopterus eatoni Buch.)

Hosts this year: Ponderosa and Jeffrey pine.

Current conditions: Moderate loss of pine reproduction continued with the most noteworthy tree-killing occurring in plantations in Siskiyou and Tuolumne Counties.

Trend: Static at moderate level.

Control: Ground application of lindane in diesel oil was pilot tested on a small scale, but the effectiveness of this treatment method has not yet been determined.

CALIFORNIA FLATHEADED BORER (Melanophila californica Van Dyke)

Host this year: Jeffrey pine.

Current conditions: Insect populations were low in all sections of the State. Only two infestations were reported--one each in Riverside and San Diego Counties.

Trend: Static at low level.

Control: Maintenance control programs in southern California. No control in northern California.

Division of Timber Management
U. S. FOREST SERVICE
630 Sansome Street
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IMPORTANT FOREST INSECT OUTBREAKS INTERMOUNTAIN REGION - UTAH, NEVADA, WESTERN WYOMING, AND SOUTHERN IDAHO 1963

Mark D. McGregor

U. S. Forest Service
Region Four

BARK BEETLES

MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.)

Host this year: Lodgepole pine.

Current conditions: The mountain pine beetle continued to cause serious losses in overmature stands of lodgepole pine in the Intermountain States. Over 500,000 lodgepole pine were infested in epidemic centers. The infestations on the Teton and Targhee National Forests, and Grand Teton National Park continue to enlarge and now contain 400,000 infested trees. A large infestation on Bureau of Land Management and private lands in Sublette County, Wyoming, and another on Bureau of Land Management, State and private lands in Bingham County, Idaho, increased during the year. Each of these outbreaks contain over 10,000 infested trees. Smaller outbreaks on the Cache and Caribou National Forests in Idaho showed increasing tendencies. Large-scale control projects have been initiated yearly since 1958 to reduce the number of infested trees in the major infestations now present.

Trend: Epidemic and increasing in most areas.

Control: There were four major control projects in 1963 on the Wasatch National Forest, Utah; Teton National Forest, and Grand Teton National Park, Wyoming; and Targhee National Forest, Idaho. Infested trees were logged, treated with chemicals, or burned. On the Wasatch National Forest North Slope project, over 500,000 infested trees have been treated since 1958. The bark beetle population has now been reduced to where only 19,000 lodgepole pines are infested. Logging and chemical treating materially reduced the loss of lodgepole pine from mountain pine beetle epidemics on the Targhee National Farest, Idaho and the Teton National Forest, Wyoming. Chemical treating within Grand Teton National Park, Wyoming accomplished considerable reduction on treated areas. State, private, and Federal land managers cooperated to suppress aggressive outbreaks in lodgepole pine stands near McCall, Idaho. While not all epidemics were under control, results were encouraging.

ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.)

Host this year: Engelmann spruce.

Current conditions: Direct control efforts carried on for the last few years against the Engelmann spruce beetle in the Upper Green River infestation, Bridger National Forest, Wyoming, reduced the bark beetle population in that area to endemic levels. With one exception the remainder of the spruce stands in the Region are relatively free from Engelmann spruce beetle activity. The exception is on the Dixie National Forest, Utah, where general increasing tendencies were noted in spruce stands east of Widstoe, Utah.

Trend: Static in all known areas except on the Dixie National Forest where the trend is increasing.

Control: Logging combined with chemical control.

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Host this year: Douglas-fir.

Current conditions: Douglas-fir beetle activity was down considerably this year from what it has been in the last ten years. On the Dixie National Forest, Utah, the bark beetle population this year was nearly completely eliminated by natural factors. Last year over 70 percent of the Douglas-fir stands on this forest contained epidemic infestations. Throughout most of the remainder of the Region a slight decline in Douglas-fir beetle activity occurred. On the Sublett Division, Sawtooth National Forest, Idaho, logging operations were continued in an effort to bring a large Douglas-fir beetle infestation under control. Several more years of logging will be needed to ensure the success of this operation.

Trend: Decreasing in all areas except on the Sublett Division, Sawtooth National Forest, Idaho.

Control: Logging.

FIR ENGRAVER BEETLE (Scolytus ventralis Lec.) and
WESTERN BALSAM BARK BEETLE (Dryocoetes confusus (Sw.))

Host this year: True firs.

Current conditions: The fir engraver beetle, Scolytus ventralis Lec. and the western balsam bark beetle, Dryocoetes confusus (Sw.), have killed thousands of fir trees throughout the Intermountain States during the past few years. Infestations vary from a few acres in size to hundreds of acres. The majority of the infested stands are in rather inaccessible areas and have relatively low economic value. Thus, control of infestations is rarely undertaken except in high-value recreation areas. A definite increase in epidemic activity occurred on the Teton National Forest, Wyoming; Humboldt National Forest, Nevada; and on the Uinta and Manti-LaSal National Forests, Utah.

Trend: Increasing throughout the Region.

Control: No major control effort planned.

DEFOLIATING INSECTS

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Hosts this year: Douglas-fir, true firs, and Engelmann spruce.

Current conditions: The spruce budworm infestation in southern Idaho has increased in scope and severity since 1958. One and six tenths million acres of Douglas-fir and true fir timber are now infested. Some mature trees and many young trees have been killed in areas receiving heavy defoliation over several consecutive years. Tree killing, especially of understory, is expected to increase because of the accumulated effects of repeated defoliation.

Trend: Epidemic increasing.

Control: Slightly more than 200,000 acres were treated by aerial application of DDT, most of which was on the Targhee National Forest, Idaho. Dosage rates of one-half and one pound of DDT per acre were applied. An average kill of 91 percent on the one-half pound areas and 97 percent on the one pound areas was obtained. A cooperative administrative test was conducted on the Salmon National Forest, Idaho to determine what effect various dosages and methods of applications would have on chinook salmon fry, other game fishes, and aquatic insects.

ASPEN LEAF TIER (Sciaphila duplex (Wlsh.))

Host this year: Quaking aspen.

Current conditions: A leaf tier, Sciaphila duplex (Wlsh.), continued to be epidemic in aspen stands in Utah and southern Idaho. Acreages infested by this pest decreased this year but the infestation still extends over 150,000 acres of commerical stands, recreation areas, and game ranges. Some tree mortality occurred in areas where heavy defoliation took place for three consecutive years. In general, defoliation was lighter and damage less severe this year than last. Only a few areas showed heavier defoliation than was experienced in 1962.

Trend: Decreasing in most areas, increasing in a few isolated areas.

Control: None at present.

TUSSOCK MOTHS (Hemerocampa spp.)

Hosts this year: Douglas-fir, true fir, and bitterbrush.

Current conditions: Several large tussock moth outbreaks were present on a variety of host species in southern Idaho and western Nevada.

Two infestations continued epidemic, one declined, and a sizeable new outbreak was discovered. Approximately 60,000 acres of Douglas-fir are infested with Hemerocampa pseudotsugata McD. on the Boise National Forest, Idaho. The infestation reached epidemic populations in 1962 and is expected to continue to increase in severity and size. A 60,000 acre infestation in white fir stands on the Humboldt National Forest in northern Nevada declined naturally after about three successive years of heavy defoliation. A new outbreak of Hemerocampa pseudotsugata McD. was discovered this year in Owyhee County, Idaho. This infestation covers 12,000 to 15,000 acres of Douglas-fir timber in an area which has been subjected to two previous outbreaks in the last ten years. Another species, Hemerocampa vetusta (Bdv.), is again active on bitterbrush near Reno, Nevada.

Trend: Decreasing to static on the Humboldt National Forest and epidemic and increasing in all other infestations.

Control: Satisfactory control was obtained with a polyhedral virus that was applied by aircraft to 12,000 acres of the large infestation in Douglas-fir on the Boise National Forest, Idaho.

FALL AND SPRING CANKERWORMS, (Alsophila pometaria (Harris) and Paleacrita vernata (Peck))

Hosts this year: Boxelder, maple, and mountain ash.

Current conditions: An epidemic of fall and spring cankerworms has been present on the Wasatch National Forest in Mill Creek Canyon just east of Salt Lake City, Utah for the last three years. Hosts were boxelder, maple, and mountain ash.

Trend: Decreasing to static.

Control: This year part of the infestation was treated with malathion by helicopter. Control was good and the cankerworm populations were reduced to a tolerable level.

A GEOMETRID, Anacamptodes clivanaria (Guenee)

Hosts this year: Mountain mahogany and bitterbrush.

Current conditions: An outbreak of this geometrid on Bureau of Land Management lands in the Juniper Mountain area of Owyhee County, Idaho, covering several thousand acres of mountain mahogany was discovered in 1962. Extensive mortality to this valuable brouse specie has resulted from two years of feeding.

Trend: Epidemic, increasing.

Control: No control developed.

ASPEN LEAF MINER (Phyllocnistis populiella (Chamb.))

Host this year: Quaking aspen.

Current conditions: This leaf miner persisted at epidemic levels throughout southeastern Idaho, western Wyoming, and northern Utah. Infestations have existed in these areas for over fifteen years. Considerable tree deformity and growth reduction have occurred the past few years.

Trend: Epidemic, increasing.

Control: None developed for large-scale infestations.

WHITE FIR NEEDLE MINER (Epinotia meritana (Hein.))

Host this year: White fir.

Current conditions: A considerable increase in this fir needle miner population was evident on the Dixie National Forest and Bryce Canyon National Park in southern Utah. The present infestation covers several thousand acres of white fir timber, much of which was seriously defoliated by the pest several years ago. Defoliation is expected to be more severe next year and it is likely the infestation will increase in size.

Trend: Epidemic, increasing.

Control: None planned.

LODGEPOLE NEEDLE MINER (Recurvaria milleri (Busck.))

Host this year: Lodgepole pine.

Current conditions: There was a general decline in damage over most of the lodgepole needle miner infestations in Idaho, Wyoming, and Utah where some 200,000 acres of lodgepole pine have been infested. Severe defoliation occurred southwest of Pond's Lodge, Idaho on the Targhee National Forest.

Trend: Epidemic, decreasing.

Control: None.

GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis (Stretch))

Hosts this year: Quaking aspen, cottonwood, brush and browse species.

Current conditions: Serious defoliation of aspen, cottonwoods, and several herbaceous plants by tent caterpillars occurred along the Virgin River and in other localized areas in southern Utah. Epidemic populations were present near the Jackson Airport in Grand Teton National Park and along the Middle Fork of the Boise River near

Featherville, Idaho. Bitterbrush was the preferred host in western Wyoming and southern Idaho.

Trend: Epidemic, increasing.

Control: A control program in Zion National Park was successful in reducing the damage on broadleaf trees in the recreation areas. Bacillus thuringiensis Berliner, was applied with a Buffalo mist blower.

PINE TUBE MOTH (Argyrotaenia sp.)

Host this year:: Lodgepole pine.

Current conditions: Populations of a pine tube moth declined in the lodgepole pine stands on the Targhee National Forest in eastern Idaho. Populations still persist over 200,000 acres but the severity of damage is expected to decrease next year.

Trend: Static, decreasing.

Control: None.

SUCKING INSECTS

MEALYBUGS (Puto spp.)

Hosts this year: True firs, white bark, and Engelmann spruce.

Current conditions: Populations of the spruce mealybug, Puto sp., continued at epidemic levels within Engelmann spruce stands on the Dixie National Forest in southern Utah. The infestations occurred in three separate areas totaling approximately 60,000 acres. Noticeable limb killing has occurred. Mortality of Engelmann spruce reproduction is common within older infestations. Infestations of the mealybug, Puto cupressi (Coleman), have been epidemic since 1958 on the Payette National Forest, Idaho. The infestations persist for two or three years and then nearly disappear only to reappear in other locations. The present infestation covers several thousand acres north of McCall, Idaho. Limited tree mortality has occurred.

Trend: Epidemic, increasing.

Control: No practical control developed.

PINYON NEEDLE SCALE (Matsucoccus acalyptus (Herb.))

Host this year:: Pinyon pine..

Current conditions: The pinyon needle scale caused severe defoliation throughout much of the pinyon pine type of southwestern Utah and Nevada. Considerable spread is expected if the present epidemic trend persists. Tree mortality has occurred in some locations. One of the larger infestations southeast of Panguitch, Utah increased

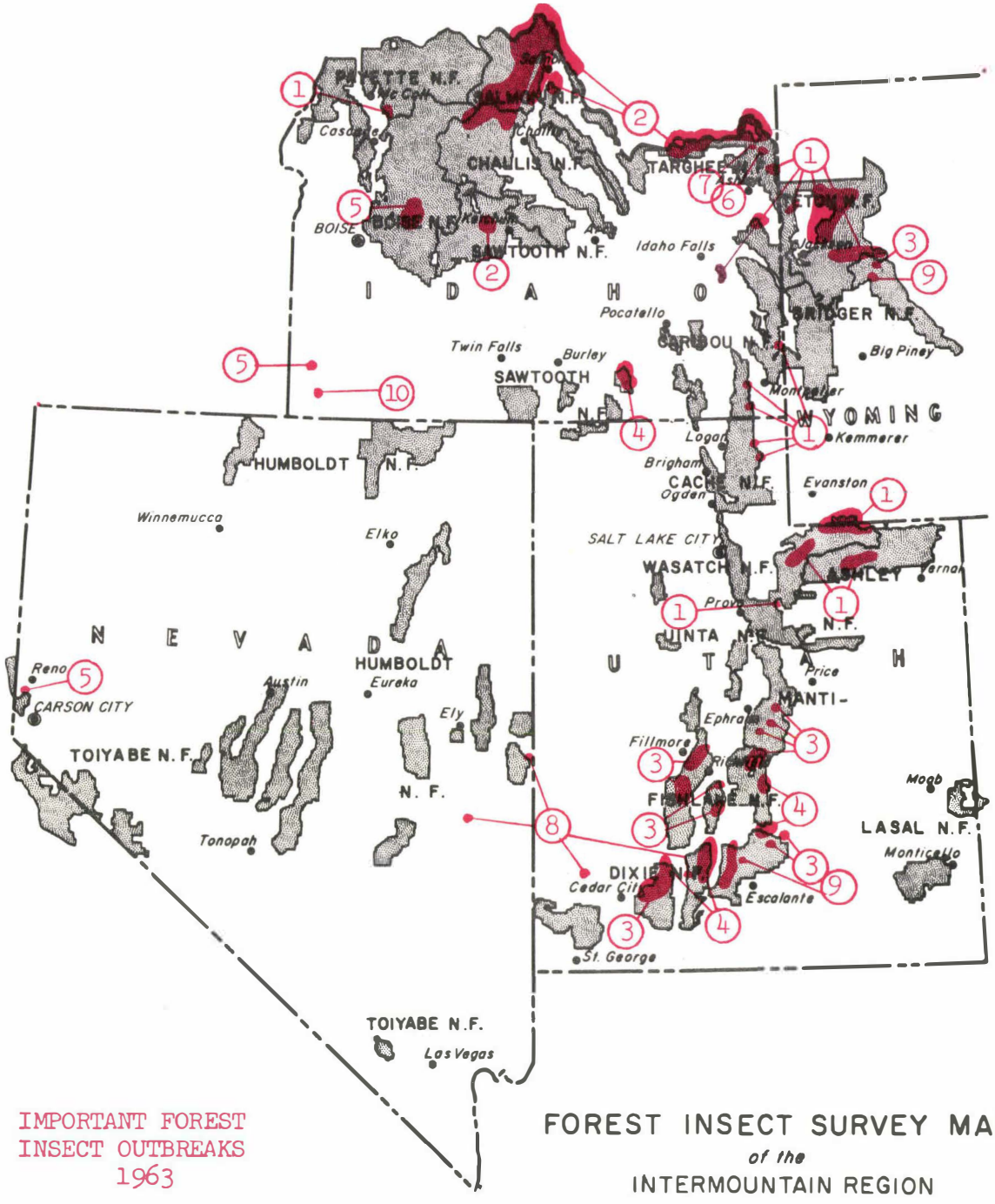
in size and seriousness of defoliation again this year. Spring evaluations of infested areas showed egg mass densities were sufficient to maintain the populations at epidemic levels.

Trend: Epidemic increasing.

Control: None planned.

MISCELLANEOUS INSECT PROBLEMS

Other insects: Several small outbreaks of western pine beetle, Dendroctonus brevicomis Lec., flared up in ponderosa pine in southern Idaho. Black Hills beetle, Dendroctonus ponderosae Hopk., activity was at a low level except for small outbreaks near Price, Utah and on the Humboldt National Forest near Baker, Nevada. Ips sp. were active in local areas of pinyon pine in southern Utah. Scales that were abundant on conifers last year have declined in some areas. Heavy populations of aphids were recorded on both conifers and deciduous trees throughout the Intermountain Region. Epidemic infestations of spittlebugs were present in several juniper stands of southern Utah and on planted lodgepole pine around Pine View Reservoir near Ogden, Utah. Large flights of sheep moth, Pseudohazis sp. were observed on the Caribou National Forest, Idaho where snowberry has been seriously defoliated for the last two years.



IMPORTANT FOREST INSECT OUTBREAKS 1963

FOREST INSECT SURVEY MAP

of the

INTERMOUNTAIN REGION

(1) Mountain Pine Beetle
(2) Spruce Budworm
(3) Aspen Leaf Tier
(4) Douglas Fir Beetle
(5) Tussock Moth
(6) Lodgepole Needle Miner
(7) Pine Tube Moth
(8) Pinion Pine Scale
(9) Engelmann Spruce Beetle
(10) Anacamptodes clivinaria (Guenee)

PREPARED BY
REGION FOUR
U.S. FOREST SERVICE

FOREST INSECT CONDITIONS IN THE NORTHERN REGION DURING 1963

By
Scott Tunnock, Entomologist
Division of State and Private Forestry

BARK BEETLES

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Hosts this year: Douglas-fir.

Current conditions: Montana - Severe epidemic outbreaks are scattered over 46,000 acres in the Flathead National Forest and adjoining timberland. The beetle population is maintaining a low epidemic level within many drainages in the Kootenai National Forest. Damage in the Gallatin National Forest consists of small groups scattered throughout most of the Douglas-fir type. Damage is light in the Lolo National Forest. Idaho - A severe epidemic is active in the Nezperce National Forest and extends from Riggins to Grangeville through about 12,000 acres. Light infestations are spread through 4,500 acres near Elk City. Infestations are still active on the Powell Ranger District, Clearwater National Forest.

Trend: Infestations are not expected to decrease.

Control: Logging-for-control has begun on the Flathead National Forest, Montana, and has been recommended in the other areas.

MOUNTAIN PINE BEETLE (Dendroctonus (monticolae) ponderosae Hopk.)

Hosts this year: Western white pine and lodgepole pine.

Current conditions: Montana - The Kootenai National Forest contains about 5,200 acres of lodgepole pine in the Yaak River drainage that are lightly infested. Many groups of white pine were killed during 1962 and 1963 along the northeast and southwest sides of Hungry Horse Reservoir. Idaho - In the Kaniksu National Forest there are six infestation centers in mature western white pine stands. Heaviest killing occurred within the headwaters of the Priest River and covered about 2,500 acres. Areas of chronic infestations in the Clearwater National Forest, within mature western white pine stands, cover about 141,000 acres. Two to three percent of these trees are killed annually by the beetle. Aerial surveys indicated that low-level infestations in white pine stands are probably increasing in drainages along the St. Joe River from Avery to Red Ives. The Coeur d'Alene National Forest also contains several drainages of mature white pine located along the Coeur d'Alene River that suffer from chronic attacks.

Trend: Damage will probably be the same in the chronically infested areas but may increase in the Kaniksu National Forest, Idaho.

Control: Sanitation-salvage logging is being done in the Clearwater, St. Joe, Coeur d'Alene, and Kaniksu National Forests, Idaho. Operational surveys are planned for infestations in lodgepole stands in the Kootenai National Forest, Montana.

FIR ENGRAVER (Scolytus ventralis Lec.)

Hosts this year: Grand and alpine fir trees.

Current conditions: Montana - Thousands of acres of grand and alpine fir trees are infested east of Big Fork, and north of Whitefish. Idaho - Losses that started in 1961 were still high on the west half of the Nezperce National Forest, the Clearwater National Forest from the North to the Middle Fork Clearwater River, and the St. Joe National Forest from St. Maries to Bovill.

Trend: Damage is expected to decrease.

Control: None anticipated.

DOUGLAS-FIR ENGRAVER (Scolytus unispinosus Lec.)

Hosts this year: Douglas-fir.

Current conditions: A light population still remains in an 1,800-acre stand west of Ravalli, Montana.

Trend: Decrease.

Control: Natural control.

OREGON PINE ENGRAVER (Ips oregonis (Eichh.))

Hosts this year: Ponderosa and lodgepole pine trees.

Current conditions: Montana - Most ponderosa pine stands contained a few small groups in western Montana. Idaho - Occasional infested areas of ponderosa pine were detected in drainages along the Salmon River from Riggins to Grangeville. Four large groups were seen near Rathdrum.

Trend: Unknown.

Control: Was not controlled.

DEFOLIATORS

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Hosts this year: Douglas-fir, true firs, hemlock, and spruce.

Current conditions: Data collected from permanent plots located in areas of chronic defoliation indicated little change in the Region-wide infestation during 1963. Records for the past 5 years are summarized in the following table:

	1959	1960	1961	1962	1963
Percent defoliation	38	34	37	25	35
Egg masses per M sq. in.	10.4	4.1	8.4	10.5	9.5
Percent egg mass parasitism	3.8	1.0	4.3	6.0	0.0
New foliage growth (inches)	0.81	0.59	0.69	0.78	0.93
New foliage destroyed (inches)	0.31	0.20	0.26	0.20	0.32
Net length of new foliage (inches)	0.50	0.39	0.43	0.58	0.61

The infestation is static. There is no indication that it will change its level. Pattern of spread is changing, however. In 1963, budworm damage extended westward from the West Fork of the Bitterroot drainage in Montana into Idaho as far as the Red River Ranger District in the Nezperce National Forest. It also appears to be moving northwestward in western Montana. Infested acreage decreased in central Montana. Two million acres of visible damage were recorded in 1963.

A separate small outbreak was detected on the Kootenai National Forest, Montana, and two somewhat larger areas were discovered on the Kaniksu National Forest, Idaho, which extend into Washington. These last three were all low-level infestations in 1963.

Trend: Region-wide, defoliation will be about the same. Infestations may spread into new areas, however.

Control: About 500,000 acres of Douglas-fir type may be sprayed in 1964. Some 415,000 acres were sprayed in 1963.

DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata McD.)

Hosts this year: Grand fir, Douglas-fir, and spruce trees.

Current conditions: Infestations have been present around private homes and farm woodlots since 1961 in northern Idaho. In 1963, two infestations were detected in northwestern Montana on forested land. An infested area near Kalispell, Montana covers about 1,400 acres of State and privately owned land, and a light infestation of 10 acres occurred near Hungry Horse Reservoir.

Trend: Idaho - Bonners Ferry area, static; Copeland, increase; Clark Fork, decrease; Algoma Lake, increase; Albeni Falls, decrease; Hayden Lake, increase; Coeur d'Alene, increase; and Mineral Mountain, increase. Montana - Kalispell, static; and Lion Lake near Hungry Horse, decrease.

Control: Many of the infested trees in Idaho were sprayed by the State in all areas except Clark Fork and Mineral Mountain Lookout.

LARCH CASEBEARER (Coleophora laricella (Hbn.))

Hosts this year: Western larch.

Current conditions: Epidemic continues to spread through the larch type in the Northern Region. In Montana and Idaho, the forefront has extended as far north as Bonners Ferry, Idaho; east down the Clark Fork River to Plains and Superior, Montana; and as far south as Elk River, Idaho. Tree mortality has not resulted yet from continued heavy defoliation, but radial growth has diminished to about 40 to 50 percent of normal in some areas.

Trend: Heavier defoliation along the fringes of the forefront and continued spread.

Control: Progeny of parasites liberated in 1960 were found in 1963 and their population is increasing. Three organic phosphate insecticides were tested this spring by applying them from a helicopter. They all gave excellent control under test conditions.

LARCH SAWFLY (Pristiphora erichsonii (Hartig))

Hosts this year: Western larch.

Current conditions: For the last 3 years infestations have been increasing in northern Idaho and to some extent in Montana. The St. Joe National Forest, Idaho contained many infested stands of western larch ranging in size from 100 to 13,000 acres. The most heavily infested area was between Clarkia and Elk River. About 12,000 acres of larch were defoliated in the Clearwater National Forest, Idaho. In Montana, 3,000 acres were detected south of St. Regis in Cedar Creek. Control measures have never been used against this pest in the Northern Region.

Trend: Questionable.

Control: Was not controlled.

LARCH BUDMOTH (Zeiraphera griseana (Hubner))

Hosts this year: Western larch.

Current conditions: From 1955 to 1957 this moth caused noticeable defoliation in many northern larch stands. It was next detected in one stand east of Libby, Montana during 1961. This year it severely defoliated sections of larch in Beaver and Little Beaver Creek drainages in the Lolo and Kaniksu National Forests, Montana, and probably is scattered throughout many thousands of acres to the south.

Trend: Expect some increase in damage and spread.

Control: Was not controlled.

PINE NEEDLE-SHEATH MINER (Zelleria haimbachi Busck.)

Hosts this year: Ponderosa and lodgepole pine trees.

Current conditions: Damage has been increasing in most lodgepole and ponderosa pine stands from central Montana into northern Idaho since 1960. About 4,000 acres of lodgepole pine in Truman Gulch, Gallatin National Forest, Montana, were defoliated again. A severe epidemic developed in 1963 in lodgepole pine stands north of Whitefish, north and east of Columbia Falls, all around West Glacier, the north part of the South Fork Flathead River, and through the southern portion of the Swan River Valley in Montana. About 168,000 acres are involved. Damage to ponderosa pine trees was noticeable near Grangeville, Idaho.

Trend: Damage will probably be the same in 1964.

Control: Was not controlled.

DOUGLAS-FIR NEEDLE MIDGES (Contarinia pseudotsugae and C. constricta Condr.)

Hosts this year: Douglas-fir trees.

Current conditions: Almost all Douglas-fir stands in Montana and northern Idaho have been infested with these two midges since 1957. Heavy damage to current needles was observed in drainages on the west side of the Salmon River from Riggins to Grangeville, and along the South, Middle, and North Forks of the Clearwater River in Idaho. Harvesting of Christmas trees has been limited by this pest on the Kootenai, Lolo, and Flathead National Forests, Montana.

Trend: Expect the same level of damage in 1964.

Control: Has not been controlled.

PINE NEEDLE SCALE (Phenacaspis pinifoliae (Fitch))

Hosts this year: Ponderosa and lodgepole pine trees.

Current conditions: It was still active during 1963 in about 1,200 acres of lodgepole pine in Glacier National Park, Montana. Tree killing was noticed in 1962. Very heavy populations were present on ponderosa pines south of Missoula, Montana. Homeowners are considering control measures. Occasional pine trees alongside dusty roads contained moderate populations over most of the Region.

Trend: Populations will probably maintain the same levels in 1964.

Control: Was not controlled.

PINE BUTTERFLY (Neophasia menapia Feld.)

Hosts this year: Western white and ponderosa pine trees.

Current conditions: Adults were observed flying around the tops of western white pine and ponderosa pine trees in numerous areas throughout most of the Northern Region. A heavy population was reported infesting ponderosa pines scattered along the Salmon River, Idaho.

Trend: Infestations will probably occur in the same areas during 1964.

Control: Was not controlled.

WESTERN PINE TIP MOTH (Rhyacionia frustrana bushnelli (Busck.))

Hosts this year: Ponderosa pine trees.

Current conditions: Infestations in eastern Montana seem to be cyclic. Damage to ponderosa pine saplings and reproduction was heavy during 1957 to 1959. It was hardly noticeable for the next few years then began to increase in 1962. By 1963, damage was visible from the air on 13,000 acres near Ekalaka, and the Long Pines area, and 52,000 acres south of Ashland on the Custer National Forest, Montana. West of Ashland, on the Northern Cheyenne Indian Reservation, 26,000 acres were heavily damaged.

Trend: Expect increased damage in 1964.

Control: Was not controlled.

FALSE HEMLOCK LOOPER (Nepytia canosaria (Wlkr.))

Hosts this year: Douglas-fir trees.

Current conditions: It is uncommon for this moth to cause heavy defoliation in the Northern Region. About 350 acres of Douglas-fir trees were infested in 1963 on the National Bison Range, Moiese, Montana. An abundant moth flight was observed in September.

Trend: Questionable - defoliation level may be the same.

Control: No control planned.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Hosts this year: Aspen, birch, alder, and willow trees.

Current conditions: Aspen, birch, alder, and willow type stands were heavily defoliated in northern Idaho. About 108,000 acres were infested in the Kaniksu National Forest mainly north and south of Sandpoint. Near Hayden Lake and along the Coeur d'Alene River drainage, nearly 8,000 acres were lightly defoliated. Parasitism of pupae was very high and it is expected that the epidemic will decrease next year.

Trend: Decreased defoliation in 1964.

Control: Was not controlled.

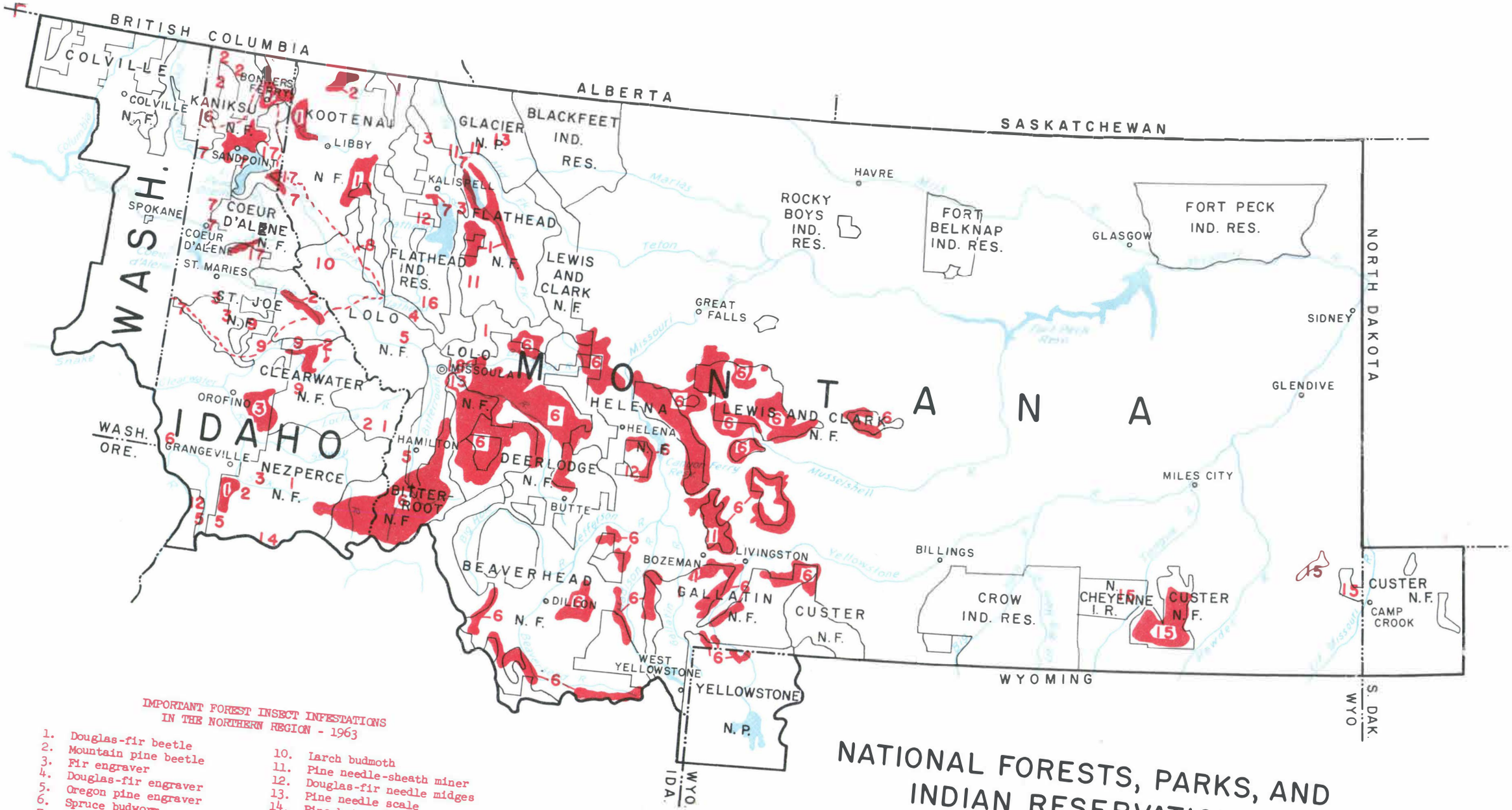
RUSTY TUSSOCK MOTH (Notolophus antiqua (L.))

Hosts this year: Many species of deciduous brush.

Current conditions: Cocoons were found on western larch trees on the Sylvanite and Warland Ranger Districts, Kootenai National Forest, Montana. Damage was slight. Numerous egg masses were observed on the foliage of many species of brush-type plants northeast of Missoula, Montana.

Trend: Light defoliation within the same areas.

Control: Was not controlled.



IMPORTANT FOREST INSECT INFESTATIONS
IN THE NORTHERN REGION - 1963

1. Douglas-fir beetle
2. Mountain pine beetle
3. Fir engraver
4. Douglas-fir engraver
5. Oregon pine engraver
6. Spruce budworm
7. Douglas-fir tussock moth
8. Larch casebearer
9. Larch sawfly
10. Larch budmoth
11. Pine needle-sheath miner
12. Douglas-fir needle midges
13. Pine needle scale
14. Pine butterfly
15. Western pine tip moth
16. False hemlock looper
17. Forest tent caterpillar
18. Rusty tussock moth

----Forefront of larch casebearer infestation.

NATIONAL FORESTS, PARKS, AND INDIAN RESERVATIONS IN THE NORTHERN REGION

0 20 40 60 80 100 MILES

U. S. FOREST SERVICE
R-6

5200
Portland, Oregon
October 1963

IMPORTANT INSECT OUTBREAKS IN OREGON AND WASHINGTON IN 1963

by

P. W. Orr
Division of Timber Management
Insect and Disease Control Branch

SUMMARY

Epidemic forest insect outbreaks occurred in 1,311,085 acres of forest land in Oregon and Washington. The locations of the major outbreaks are shown on the accompanying map. During the last decade, the trend of infestations was as follows:

Year	Infested acreage	Year	Infested acreage
1954	7,704,120	1959	1,448,360
1955	2,248,820	1960	1,272,960
1956	1,410,660	1961	1,223,230
1957	2,129,440	1962	1,305,170
1958	2,032,720	1963	1,311,085

Bark beetle outbreaks accounted for the majority of the timber losses. Defoliator damage remained static while the sucking insect damage increased greatly. No control projects are likely to be needed in 1964.

Douglas-fir beetle attacks in windthrown timber ranged from light to heavy. These heavy beetle populations may cause serious tree killing in 1964.

All known infestations of the European pine shoot moth outside the containment zone in northwestern Washington have been eradicated.

Chemical control of bark beetles was limited to a small maintenance project against the mountain pine beetle in lodgepole pine in Crater Lake National Park.

Summary of 1963 forest insect epidemic infestations in Oregon and Washington

Insects 1/	Oregon		Washington		Regional total	
	Infestation centers	Area	Infestation centers	Area	Infestation centers	Area
	Number	Acres	Number	Acres	Number	Acres
Defoliators:						
Spruce budworm	13	49,040	4	10,200	17	59,240
Larch casebearer	0	0	44	37,030	44	37,030
Oak looper	29	16,750	0	0	29	16,750
Knobcone sawfly	8	7,440	0	0	8	7,440
Pandora moth	1	3,800	0	0	1	3,800
Douglas-fir tussock moth	0	0	19	1,515	19	1,515
Unknown sawfly (larch)	3	570	0	0	3	570
Western hemlock looper	6	540	0	0	6	540
Contarinia sp.	2	105	0	0	2	105
All defoliators	62	78,245	67	48,745	129	126,990
Sucking insects:						
Balsam woolly aphid	196	102,145	71	85,310	267	187,455
Unknown mite (Douglas-fir, true firs)	9	31,100	0	0	9	31,100
All sucking insects	205	133,245	71	85,310	276	218,555
Bark beetles:						
Mountain pine beetle (W)	219	67,845	366	410,545	585	478,390
Mountain pine beetle (L)	178	50,220	37	17,620	215	67,840
Mountain pine beetle (P)	262	32,220	11	1,155	273	33,375
Western pine beetle	497	98,395	61	39,275	558	137,670
Douglas-fir beetle	310	24,545	167	60,700	477	85,245
Fir engraver	323	58,280	62	15,865	385	74,145
Silver fir beetle	0	0	46	54,840	46	54,840
Oregon pine ips	190	15,580	14	2,600	204	18,180
Engelmann spruce beetle	33	4,115	47	11,015	80	15,130
Douglas-fir engraver	6	625	3	100	9	725
All bark beetles	2,018	351,825	814	613,715	2,832	965,540
All insects	2,285	563,315	952	747,770	3,237	1,311,085

1/ Mountain pine beetle infestations are separated by tree species: W, western white pine; L, lodgepole pine; P, ponderosa pine.

DEFOLIATORS

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Hosts this year: Douglas-fir, grand fir, white fir, subalpine fir, western hemlock, and Engelmann spruce.

Current conditions: The only epidemic outbreaks in Oregon this year occurred on the Fremont and Wallowa-Whitman National Forests. In both areas, the defoliation ranged from light to moderate. In Washington, light to moderate defoliation occurred on the Kaniksu National Forest. Infestations recorded in 1962 and 1963 are as follows:

Administrative area	1962		1963	
	Area	Percent	Area	Percent
	Acres		Acres	
Oregon:				
Fremont National Forest	42,060	87	37,040	62.6
Wallowa-Whitman N.F.	6,310	13	12,000	20.2
Oregon areas	48,370	100	49,040	82.8
Washington:				
Kaniksu National Forest	0	0	10,200	17.2
All areas	48,370	100	59,240	100.0

Trend: This year's spruce budworm egg mass evaluation survey showed a downward trend in the 1963-64 budworm generation. Hence, defoliation in all areas should be much lighter in 1964.

Control: No control action is needed in 1964.

WESTERN OAK LOOPER (Lambdina fiscellaria somniaria (Hulst))

Hosts this year: Oregon white oak, Oregon ash.

Current conditions: Defoliation near Monmouth, Dallas, Sheridan, Willamina and other widely scattered areas in the Willamette Valley increased considerably in 1963. Disease controlled the insect in some areas but elsewhere the larvae completed their feeding apparently uneffected. Many of the trees refoliated late in the season when larval feeding was completed.

Trend: Undetermined. Presumably upward in the mid-Willamette Valley area and downward in the northern Willamette Valley.

Control: None needed in 1964. Infestations in wood lots, farmyards, and on shade trees can be controlled by aerial application of DDT or other insecticide, if needed.

LARCH CASEBEARER (Coleophora laricella (Hübner))

Host this year: Western larch

Current conditions: Infestations continued to increase causing light to heavy defoliation over wide areas in northeastern Washington early this summer. Subepidemic populations were found from Idaho westward to Deer Park, Washington. In some areas the trees refoliated after the larvae has pupated.

Trend: Apparently upward.

Control: None needed in 1964. No tree mortality has occurred yet.

SAWFLY (Neodiprion sp.)

Hosts this year: Knobcone pine and ponderosa pine.

Current conditions: Localized outbreaks of an unidentified sawfly occurred on Thorn Mountain near Thorn Prairie, and in the Deer Creek drainage on the Umpqua National Forest in Oregon. Defoliation ranged from light to extreme but no tree mortality has yet occurred. Starvation or disease has caused considerable larval mortality especially in the knobcone pine stands.

Trend: Downward on knobcone pine and static on ponderosa pine.

Control: None needed in 1964.

PANDORA MOTH (Coloradia pandora Blake)

Hosts this year: Lodgepole pine and ponderosa pine.

Current conditions: Second year larvae caused light to heavy epidemic defoliation on the Winema National Forest near Chemult, Oregon. Elsewhere on the Winema National Forest, larvae were common but not abundant. This outbreak on the Winema National Forest is the first time in recent years that the damage has been severe enough to be seen from the air. Subepidemic larval populations continued in an old center of infestation near Sisters, Oregon.

Trend: Undetermined.

Control: Need for control measures will be determined next summer when the adults emerge, mate, and lay eggs.

DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata McD.)

Hosts this year: Douglas-fir and true firs.

Current conditions: Infestations ranging in size from a few trees to those occupying several acres were widely distributed in northeastern Washington. Most were located in farm wood lots or other rather isolated stands. These outbreaks appear to be related to the rather widespread upward cycle in the west this year.

Trend: Undetermined. Presumably static to slightly upward.

Control: Evaluation surveys are now underway. Needs for control will be determined soon.

SAWFLY (Probably Neodiprion sp.)

Host this year: Western larch.

Current conditions: Small outbreaks present on the Wallowa-Whitman National Forest last year expanded considerably in intensity and size. This year's infestations are located in the Goat Creek, Miner Basin Creek, and Big Canyon Creek drainages.

Trend: Undetermined.

Control: None needed in 1964.

LARCH LOOPER (Semiothisa sexmaculata (Pack.))

Host this year: Western larch.

Current conditions: Outbreaks in northeastern Washington near Northport flared up again after a year's absence and caused light defoliation. This outbreak is in the same general area as the one that occurred in 1961.

Trend: Undetermined.

Control: None needed in 1964. Western larch can evidently stand several seasons of defoliation before the damage becomes critical.

PINE NEEDLE FASCICLE MINER (Zelleria haimbachi Busck)

Hosts this year: Ponderosa pine, lodgepole pine, and numerous species of ornamental pines.

Current conditions: Epidemic damage in the older centers of damage near Olympia, Washington, and Ashland, Oregon, subsided completely.

Widespread subepidemic defoliation occurred on forest and ornamental pines in most areas of both States.

Trend: Downward. Parasitism of mature larvae and pupae was high.

Control: None needed in 1964. Control on ornamental pines requires early spring spray schedules.

DOUGLAS-FIR NEEDLE GALL MIDGE (Contarinia sp.)

Host this year: Douglas-fir.

Current conditions: The extensive outbreak that occurred near Sparta, Oregon, on the Wallowa-Whitman National Forest in 1963 subsided without causing any lasting damage to the Douglas-fir stands. Two small spots of new infestation occurred on localized areas on the Umatilla and Wallowa-Whitman National Forests in Oregon.

Trend: Unknown.

Control: None needed in 1964.

WESTERN HEMLOCK LOOPER (Lambdina fiscellaria lugubrosa Hulst)

Host this year: Western hemlock.

Current conditions: About 70,000 acres of mature and immature hemlock in southwestern Washington was sprayed in 1963 to control a serious looper outbreak. A carbamate, Sevin, was used operationally on those lands draining into Willapa Bay. DDT, a chlorinated hydrocarbon, was used on areas draining into the Columbia River. Larval mortality caused by Sevin averaged only 43 percent. This is less than satisfactory mortality. DDT produced excellent larval mortality averaging 98 percent. Careful application of the insecticides prevented damage to fish and wildlife resources.

The extent of the 1963 population and the resultant defoliation has not yet been determined.

Trend: Presumably upward in Washington and static in Oregon.

Control: The need for control in 1964 will be determined when the biological evaluation survey is completed this fall.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana (Schiff.))

Hosts this year: Mugho and Scotch pines are the preferred hosts. Fifteen species and varieties of pines in ornamental plantings have been attacked in the past.

Current conditions: This year 42 communities outside the containment zone were surveyed in Washington. No new infestations were found outside the containment zone. Within the zone, spread of the infestation has been rapid. New infestations were found in 25 additional communities. Eradication surveys were made in the Spokane Valley in 1961, 1962, and 1963 with negative results. In Oregon, 28 communities were surveyed with negative results. Only eight infested trees were found and destroyed in Portland.

Infestations were found on both ornamental pines and native ponderosa pine in the Okanagan Valley of British Columbia. This important discovery marks the first time the shoot moth has attacked and developed in ponderosa pine within the tree's native range.

Trend: Spread of the infestation through movement of infested nursery stock is only a matter of time.

Control: Procedures and schedules are available for fumigating pine in bundles, as container stock, or as liners in place. This fumigating procedure together with strict enforcement of existing quarantines will slow the spread of the moth.

SUCKING INSECTS

BALSAM WOOLLY APHID (Chermes piceae (Ratz.))

Hosts this year: Pacific silver fir, subalpine fir, and grand fir.

Current conditions: The infested acreage increased considerably in both States. The bulk of this increase occurred in subalpine fir stands on the Mt. Hood, Willamette, Deschutes, and Umpqua National Forests in Oregon and on the Gifford Pinchot and Snoqualmie National Forests in Washington. The aphid has extended its range southward and is now well established in Crater Lake National Park and in the upper Rogue River drainages.

Trend: In Pacific silver fir, the trend is static or slightly upward. Tree killing in subalpine fir will increase in 1964.

Control: Salvage logging is about all that can be done under forest conditions. Colonization and liberation of foreign predators was continued in 1963. Five of the imported species released have become established, but their effectiveness in controlling the aphid populations remains to be evaluated.

UNKNOWN MITE

Host this year: Douglas-fir

Current conditions: Light to heavy damage occurred on Douglas-fir needles on the Wallowa-Whitman National Forest in Oregon. Outbreaks of mites in forested areas have generally occurred following aerial spray operations where the mite's natural enemies have been killed.

Trend: Unknown.

Control: Control is not needed in 1964.

BARK BEETLES

MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.)

Hosts this year: Western white pine, lodgepole pine, and ponderosa pine.

Current conditions: Western white pine: Tree killing decreased slightly on Oregon Forests and increased considerably on Washington Forests. The majority of damage occurred on the Gifford Pinchot, Wenatchee, Mt. Baker, and Snoqualmie National Forests and in Olympic National Park in Washington. In Oregon, mortality was heaviest on the Mt. Hood, Willamette, and Umpqua National Forests.

Lodgepole pine: Mortality in lodgepole pine decreased slightly in Oregon and increased in Washington resulting in a static overall loss. Heaviest losses occurred on the Winema, Fremont, and Deschutes National Forests in Oregon and on the Gifford Pinchot, Colville, and Okanogan National Forests in Washington.

Ponderosa pine: Attacks in young ponderosa pine stands increased considerably in Oregon. Losses were centered on the Wallowa-Whitman, Fremont, and Umatilla National Forests. In Washington, low losses occurred on the Wenatchee, Umatilla, and Colville National Forests.

Trend: The trend is upward in white pine stands. In lodgepole pine and ponderosa pine, the trend is static to downward, with a few local exceptions.

Control: Control is impractical in western white pine in Oregon and Washington. Salvage of infested trees and intermingled green trees is encouraged to reduce beetle populations and salvage timber values. Maintenance control in lodgepole pine stands is scheduled in Crater Lake National Park in 1963 and 1964. Thinning to relieve stand competition and improve tree vigor in stagnated ponderosa pine stands is encouraged in both States.

WESTERN PINE BEETLE (Dendroctonus brevicomis Lec.)

Host this year: Ponderosa pine.

Current conditions: Losses caused by the western pine beetle decreased markedly in extent and intensity. The majority of this year's tree mortality occurred on the Fremont, Malheur, and Winema National Forests in Oregon and on the Yakima Indian Reservation and Glenwood District in Washington. Lighter losses this year are due in part to more favorable moisture conditions in the fall of 1962 and spring of 1963.

Trend: Static to downward in both States.

Control: Increased sanitation-salvage programs are needed on all overmature ponderosa pine stands to reduce beetle populations.

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Host this year: Douglas-fir.

Current conditions: The area infested by the Douglas-fir beetle increased slightly in both States. The largest centers of damage occurred on the Wallowa-Whitman National Forest in Oregon and on the Okanogan National Forest and Colville Indian Reservation in Washington.

The Douglas-fir beetle attacks in windfalls resulting from the Columbus Day Storm ranged from light to heavy. Past experience has shown that epidemic beetle populations often develop in windthrown timber and emerge to attack surrounding green trees. Broods emerging from this windthrown timber may cause extensive tree killing locally next year or in 1965.

Trend: Static to upward in 1964.

Control: Continued salvage of currently infested trees will help to reduce beetle population and save timber values that would otherwise be lost.

FIR ENGRAVER (Scolytus ventralis Lec.)

Hosts this year: Lowland white fir, subalpine fir, and white fir.

Current conditions: Epidemic outbreaks decreased in extent and severity this year. Most of the recorded damage in mature and immature true fir stands occurred on the Fremont, Wallowa-Whitman, and Umatilla National Forests in Oregon and on the Wenatchee and Okanogan National Forests in Washington. Most of the infestations are in low value stands.

Trend: Probably downward.

Control: None needed in 1964 because moisture conditions have improved.

SILVER FIR BEETLES (Psuedohylesinus spp.)

Host this year: Pacific silver fir.

Current conditions: Epidemic outbreaks occurred on extensive areas of the Mt. Baker and Snoqualmie National Forests in Washington. Lighter damage was found on the Gifford Pinchot National Forest and in Mt. Rainier National Park. Many of the infested trees are also severely infected with Armillaria mellea root rot.

Trend: Presumably upward.

Control: No control other than logging infested trees is needed in 1964.

OREGON PINE IPS (Ips oregonis (Eichh.))

Host this year: Ponderosa pine.

Current conditions: Region-wide damage was less extensive in 1963. Infestations in Washington increased slightly while those in Oregon decreased. The largest and most severe losses occurred on the drier sites on the Malheur and Wallowa-Whitman National Forests in Oregon and on the Yakima Indian Reservation in Washington.

Trend: Downward in both States.

Control: None is needed in 1964 because populations build up and subside rapidly. Good management practices preclude the need for direct control measures.

ENGELMANN SPRUCE BEETLE (Dendroctonus engelmannii Hopk.)

Host this year: Engelmann spruce.

Current conditions: Outbreaks of this beetle increased slightly in Oregon and Washington Forests in 1963 but remained well below the critical levels experienced from 1955-59. This year's damage was centered on the Okanogan and Umatilla National Forests in Washington and the Wallowa-Whitman National Forest in Oregon. Most of the distressed timber is in undeveloped areas; hence, control through logging infected trees is difficult.

Trend: Slightly upward in both States.

Control: None needed. In accessible stands, infested trees should be logged to reduce beetle population.

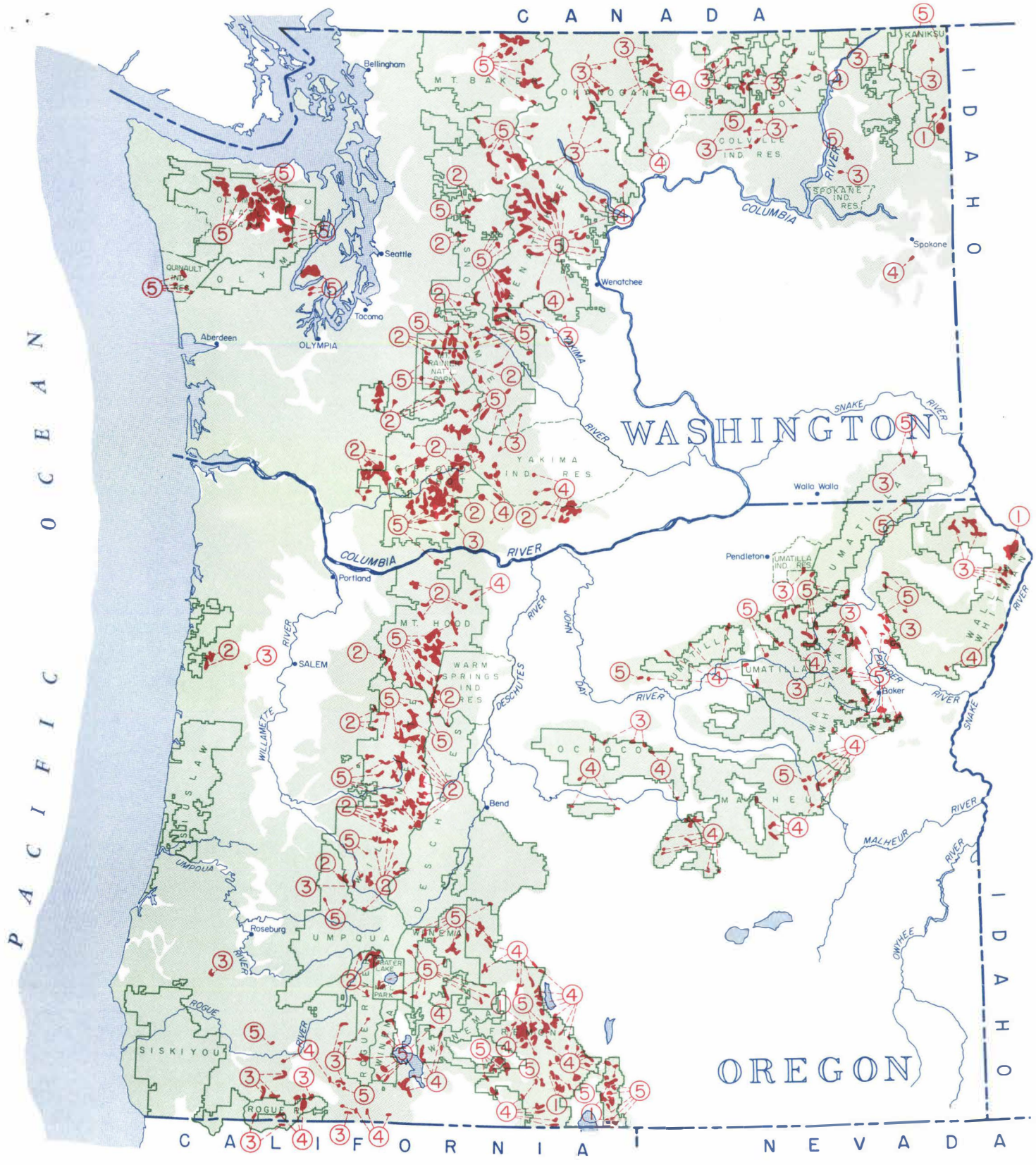
DOUGLAS-FIR ENGRAVER (Scolytus unispinosus Lec.)

Host this year: Douglas-fir.

Current conditions: A very few light outbreaks were widely scattered mostly on poor sites in both States. The damage to young Douglas-fir stands was centered on the Wallowa-Whitman National Forest in Oregon.

Trend: Downward.

Control: None needed. Most of the distressed timber is unmerchantable.



LEGEND

Forested Areas

National Forest Boundaries

Reservation and Park Boundaries

U.S. FOREST SERVICE
PORTLAND, OREGON

MAJOR FOREST INSECT OUTBREAKS 1963

1. Spruce budworm
2. Balsam woolly aphid
3. Douglas-fir beetle
4. Western pine beetle
5. Mountain pine beetle

5200
12/9/63

IMPORTANT FOREST INSECT OUTBREAKS

ROCKY MOUNTAIN REGION

1 9 6 3

DIVISION OF TIMBER MANAGEMENT

U. S. FOREST SERVICE

REGION TWO

BARK BEETLES

BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.)

Hosts: Ponderosa pine, limber pine

Current conditions: Black Hills beetle continues to be this Region's most serious problem. The largest outbreak is in the Black Hills of South Dakota and Wyoming. Infestations occur on lands of all ownerships. The general area incorporating these infestations extends north of Custer, South Dakota and westward to the Bearlodge Mountains in Wyoming. Nearly 25 million board feet of ponderosa pine has been killed. This has been estimated to be six times more volume destroyed than during 1962.

Beetle infestations have been successfully checked in the north central area of the Big Horn Mountains. Cooperative Control program involving the State of Wyoming, Bureau of Land Management and U. S. Forest Service treated 16,800 beetle infested pines during 1963.

Epidemic areas found on the Pike National Forest have been greatly reduced through a two-phase control program. The first phase involved the disposal of 40,000 infested pine through contracted cutting, piling, and burning during winter and early spring. The second phase treated 26,000 trees chemically during late spring and early summer. Surveys made this fall found beetle infestations reduced as much as 92 percent in treated areas.

Control: Private and Federal organizations in the Black Hills area of South Dakota and Wyoming have developed a coordinated three phase control program. After concentrated areas of beetle infested timber have been located, the land managers agreed to (1) offer for salvage all infested trees timber operators can use, (2) cut, pile and burn concentrated stands of infested, unusable timber, and (3) chemically treat scattered patches of infested trees during spring, 1964.

Ground surveys conducted during fall, 1963 accumulated data estimating the following number of infested trees:

Lands in South Dakota	Number of infested trees	
National Forest	137,140	
Bureau of Land Management	10,000	
State and Private	57,000	
		204,240

Lands in Wyoming	Number of infested trees	
National Forest	28,920	
Bureau of Land Management	4,000	
State and Private	6,240	
		39,160
Grand Total		243,400

MOUNTAIN PINE BEETLE (Dendroctonous monticolae Hopk.)

Hosts: Lodgepole and limber pine

Current conditions: Serious infestations of Mountain pine beetle have occurred on the Shoshone National Forest during the past several years. These infestations reached a peak during 1962. Infestations have been greatly reduced in lodgepole pine stands during 1963 through control programs involving cutting, piling and burning and chemically treating standing trees.

Control: Limited suppression projects are anticipated during 1964.

ENGELMANN SPRUCE BEETLE (Dendroctonous engelmanni Hopk.)

Host: Engelmann spruce

Current conditions: Engelmann spruce beetle continues to remain a minor problem in the Central Rocky Mountains. Beetle populations are lowest since 1956.

Four factors have kept beetle populations from increasing. (1) Severe windstorms have not occurred during the past three years, thereby reducing extensive blowdown in the spruce-fir type. (2) Natural control factors such as woodpecker predation have been more active during the past three years. (3) Spruce logging practices have changed where all spruce cull and slash are piled and burned, reducing breed sites. (4) Ground detection surveys begun in 1960 have furnished Forests with current information about potential trouble areas as to the number of wind fallen trees and number of infested standing trees.

Control: Epidemics have been brought under control on Grand Mesa-Uncompahgre, Rio Grande, and San Isabel National Forests. A persistent infestation located on the San Juan National Forest along Wolf Creek on the west side of Wolf Creek Pass is the only one within the Region. This outbreak is being suppressed through a trap tree program and an active timber sale.

DOUGLAS-FIR BEETLE (Dendroctonous psuedotsugae Hopk.)

Host: Douglas-fir

Current conditions: Douglas-fir beetle outbreaks continue to be detected along Devil Mountain on the San Juan National Forest. The outbreak in the Powderhorn area southwest of Gunnison, Colorado is still continuing. Infestations elsewhere in the Region remain at endemic levels.

Control: No control projects planned.

OREGON PINE ENGRAVER (Ips oregoni (Eichh))

Host: Ponderosa pine

Current conditions: Populations of Oregon pine engraver continue to remain at low levels throughout the Black Hills of South Dakota and Wyoming. Damage was light in 1963 and it is expected to continue light in 1964.

Control: No control projects are planned.

DEFOLIATORS

SPRUCE BUDWORM (Choristoneura fumiferana Clem.)

Hosts: Douglas-fir, white fir, subalpine fir, Engelmann spruce and ponderosa pine

Current conditions: Infestation trend throughout the Region is downward. Budworm infestations reached a peak during 1962 when 718,380 acres were detected supporting varied intensities of defoliation. Aerial detection survey in 1963 delineated 46,880 acres showing signs of budworm feeding. Defoliation intensity in both 1962 and 1963 was predominantly in the heavy classification. Data accumulated during the current budworm egg mass survey predicts defoliation in 1964 will be light.

Control: A Christmas tree sale area on the San Isabel National Forest was the only area sprayed in 1963. This control project involved 5,280 acres. Helicopter sprayer applied one half pound of DDT per acre.

PANDORA MOTH (Coloradia pandora Blake.)

Host: Lodgepole pine

Current conditions: Infestations of pandora moth caused light damage to lodgepole pine stands on the Medicine Bow, Roosevelt and Routt National Forests. Virus infected larvae were found on the Fox Park Ranger District of the Medicine Bow National Forest. This pathogen has not been identified.

Bureau of Land Management officials report heavy infestations of mature larvae in young lodgepole pine stands within the Big Creek area northwest of Walden, Colorado.

Heavy moth flights are predicted to occur in July 1964 over some areas.

Control: No control projects are planned.

IMPORTANT FOREST INSECT OUTBREAKS

SOUTHWESTERN REGION

1963

D. D. Lucht
Division of Timber Management
U.S. Forest Service
Albuquerque, New Mexico

BARK BEETLES

ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.)

Host this year: Engelmann spruce

Current Conditions: Two major Engelmann spruce beetle outbreaks declined in intensity in mature and overmature spruce in northern New Mexico. The outbreak at Lagunitas Recreation area, Carson National Forest, subsided to very low levels due to heavy predation by woodpeckers. The 6-year-old outbreak near Taos, New Mexico, is being controlled by cultural methods. The infestation near Flagstaff, Arizona, remains active. No new infestations were noted this year.

Trend: Decreasing

Control: Logging infested stems and piling and burning infested cull material. About 3,000 acres were burned this year.

BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.)

Hosts this year: Ponderosa pine and limber pine

Current Conditions: This beetle has killed most of the limber pine and is now attacking adjacent ponderosa pine on the Mountainair District, Cibola National Forest. A ground survey showed more ponderosa pine attacked in 1963 than in 1962. A check of infested ponderosa pine indicates current attacks are more successful than those of previous years.

Trend: Probably increasing in ponderosa pine, decreasing in limber pine.

Control: Pending

DOUGLAS FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Host this year: Douglas-fir

Current conditions: Continued epidemic throughout host type in Arizona and New Mexico. Tree mortality severe on the Kaibab National Forest, Arizona.

Trend: Static at a high level.

Control: Salvage logging where practical.

FIR ENGRAVER (Scolytus ventralis LeC.)

Host this year: White fir

Current conditions: An active infestation in white fir on Sandia Mountain, Cibola National Forest, New Mexico, continued its decline through 1963. The infestation on the Rim Unit, Coconino National Forest, Arizona, remained active.

Trend: Decreasing

Control: Salvage logging and slash disposal.

WESTERN BALSAM BARK BEETLE (Dryocoetes confusus Sw.)

Hosts this year: Corkbark and alpine fir

Current conditions: Tree killing continues at a high level on the Santa Fe National Forest and was severe on about 50,000 acres near Red River, Carson National Forest.

Trend: Increasing

Control: None

DEFOLIATORS

SPRUCE BUDWORM (Choristoneura fumiferana (Clem.))

Hosts this year: Douglas-fir, true fir, Engelmann spruce

Current conditions: June 1963 control efforts were highly successful on 466,000 acres of mixed conifers on the Carson and Santa Fe National Forests and on 100,000 acres of the Navajo Indian Reservation,

Arizona. This program reduced the infested area to 350,000 acres, all of which is state and privately owned in northern New Mexico. In southern New Mexico, 100,000 acres were found infested on the Gila and Lincoln National Forests. No significant decline in budworm populations is expected.

Trend: Static in northern New Mexico and increasing in southern New Mexico.

Control: None at present

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile (Stretch))

Host this year: Aspen

Current conditions: Aspen on about 100,000 acres in northern New Mexico sustained varying degrees of defoliation. Damage was less severe in old centers, but increased sharply in newly infested areas. A marked increase in populations and damage was noted on the Kaibab Plateau of northern Arizona. Aspen stands on Pinal Mountain near Globe, Arizona, and in the Huachuca Mountains west of Bisbee, Arizona, sustained heavy to severe damage. The infestation on the Navajo Indian Reservation has declined to low levels.

Trend: Generally increasing

Control: Pending

TENT CATERPILLAR (Malacosoma sp.)

Hosts this year: Cottonwood and willow

Current conditions: Annually causes severe defoliation to the above species in February and March in Sabino Canyon Recreation Area, Coronado National Forest, Tucson, Arizona. This area is visited by over 600,000 persons annually.

Trend: Static at epidemic level.

Control: Pending

SUCKING INSECTS

GRASS PLANT BUG (Labops hesperius Uhler)

Host this year: Crested wheat grass

Current conditions: This plant bug attacked about 16,000 acres of crested wheat grass plantings on the Cuba District, Santa Fe National Forest. Of this about 5,000 acres were severely damaged, reducing the grazing capacity of the range.

Trend: Increasing

Control: Pending. Pilot tests indicate that malathion, at the rate of 1 pint of 55 percent emulsifiable per acre, applied in mid-May, will control this pest.

PINYON NEEDLE SCALE (Matsucoccus acalyptus Herbert)

Host this year: Pinyon pine

Current conditions: This scale remained active at a high level at Mesa Verde National Park. In high-use areas of the Park, 7,300 trees were sprayed with 0.5 percent dimethoate.

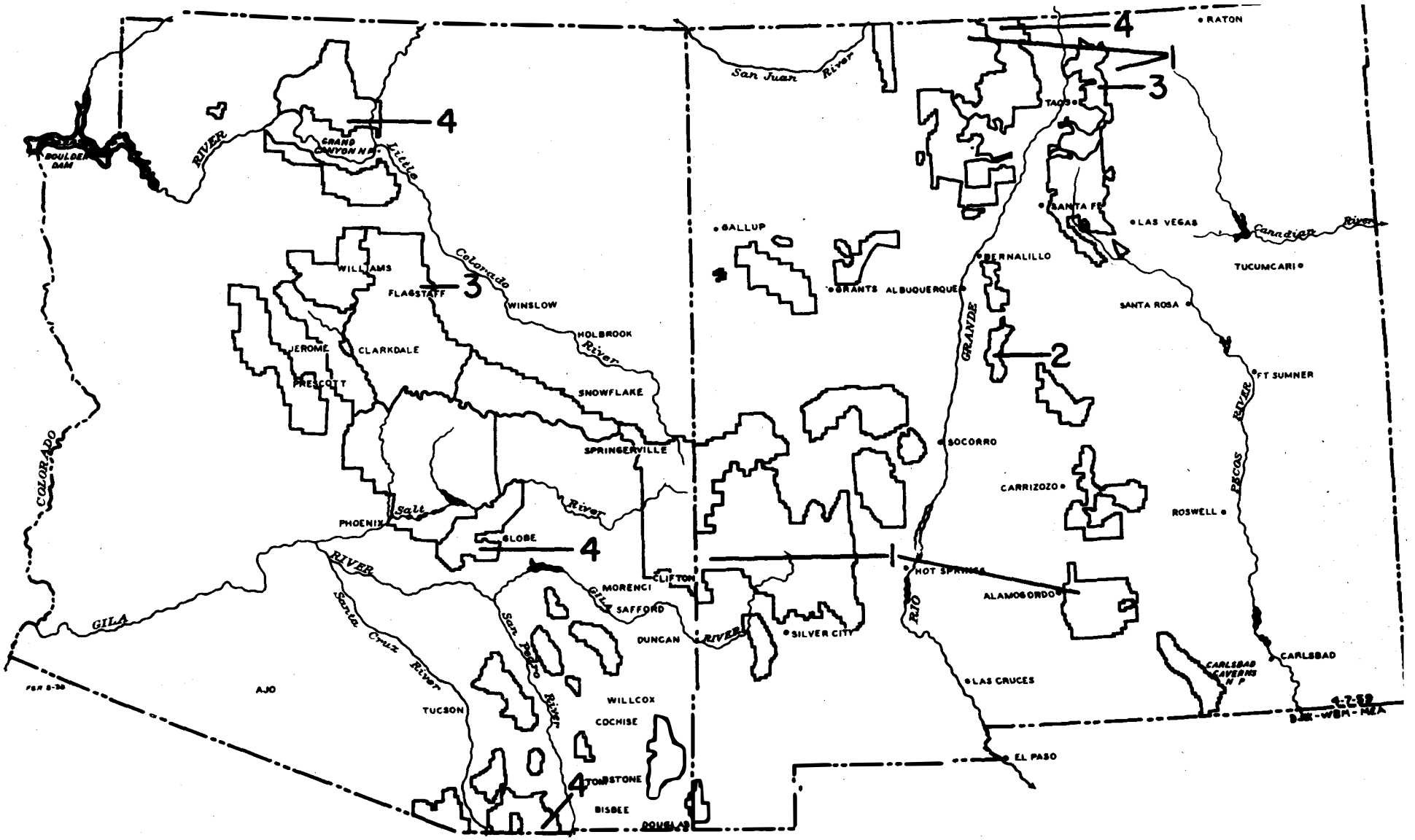
Trend: Static

Control: None

U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

REGION 3



IMPORTANT INSECT OUTBREAKS

1963

1 SPRUCE BUDWORM

2 BLACK HILLS BEETLE

3 ENGELMANN SPRUCE BEETLE

4 GREAT BASIN TENT CATERPILLAR